

The magazine for AUSTRALIAN amateurs

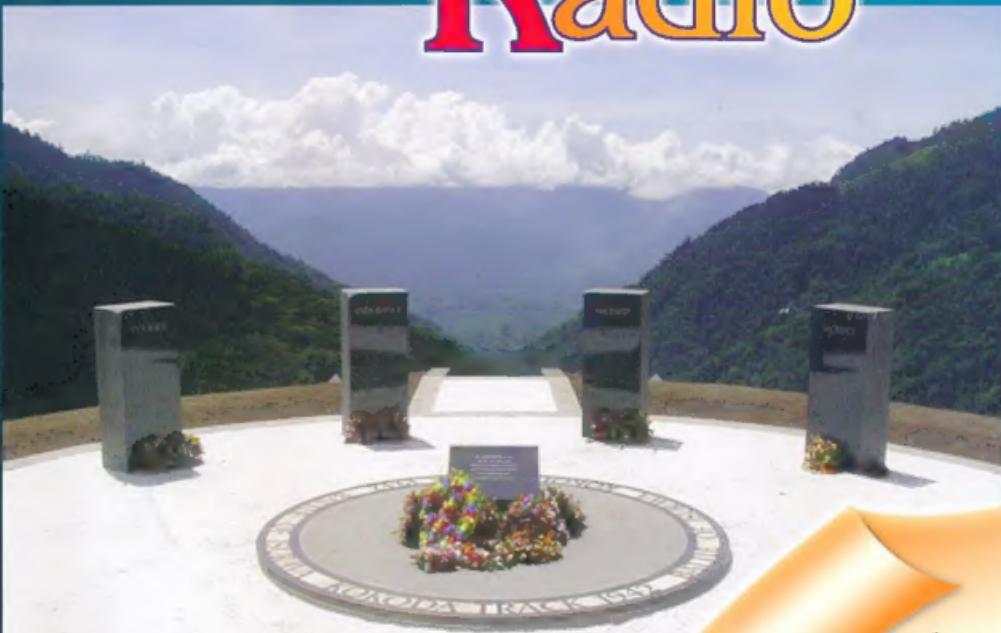
Volume 72 No 8  
August 2004



# Amateur Radio

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## Remembrance Day Contest 2004

Band-pass  
filters for  
the HF  
bands

RSQ: an improved  
signal reporting  
system for PSK

A direct reading  
inductance meter for  
radio coils

The Secret War of Wireless  
Radar band designations,  
old and new

Edison and his contribution  
to wireless

A visit to the Cardwell Bush  
Telegraph Heritage Centre

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## Our Cover this month

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### Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

### Back Issues

Back issues are available directly from the WIA Federal

Office (until stocks are exhausted), at \$4.00 each (including postage within Australia) to members.

### Photostat copies

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus an additional \$2 for each additional issue in which the article appears).

### Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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## Editorial Comment

Colwyn Low VK5UE

### Remembrance

The Remembrance Day contest is with us and our thoughts turn to those Amateurs who died in the services during the 1939 - 1945 war. We should also remember all those who served in other conflicts both past and present. The front cover comes from the Australian War Graves Commission and I thank them for their prompt response to my request to use the picture.

### Antarctic operator

The July cover had an incorrect identification of the radio operator in Antarctica, two people have pointed out the young lady is Denise Jones. As occasionally happens in archives, the original picture must have had incorrect annotation. I apologise to Denise Jones and Donna Simpson for any problems this mistake may have caused.

### State Advisory Committees

The WIA is progressing towards the finalisation of the national organisation as Divisions sign the necessary documents and the references in Amateur radio magazine are being changed from Divisions to States and State Advisory committees. I will now start to group all news from each state under a State heading.

### Somalia now on air

I was pleased to learn that Sam Voron in Somalia has received a transceiver donated by the wife of an Australian SK. It is now on the air. Listen on 14.285,

21.295 and 28.475 MHz for SIX OSCAR ZERO ALPHA.

### WICEN

The WICEN support of community and sporting events continues. The north east of Australia has a number of horse, car, cycle and human trials, which they support loyally, each year and the Tasmanian and South Australian Amateurs are critical to the operation of major car rallies in those states and local events. I really wonder why anyone would want to get up at 4 am drive through the fog and rain in the dark to set up radio links on voice and packet! Is it just to see the cars go by? All these WICEN activities provide an opportunity to advertise Amateur Radio and we should exploit them to the full. However please try and get all age groups and genders into the support otherwise "Amateur Radio a hobby for all ages etc" is bit hollow.

The Technical Abstracts on page 26 show how to build a 144 MHz and 430 MHz vertical with ground independent feed. I have built one of these and used it on WICEN exercises and FD operation I think it was a good investment of my time. Without too much trouble it has 20 W out and 1 W back. I used 15 A single solid core mains cable for the elements with the insulation left on.

### Have fun!

Well that is it for another month. Keep enjoying your hobby and please keep talking about it to all ages and genders. Good DX, good chats, good support for community activities and have fun.

73 Colwyn VK5UE

### August cover

### Isurava Memorial, Papua New Guinea

The Memorial was constructed by the Office of Australian War Graves and dedicated on 14 August 2002 by the Prime Minister of Australia, the Rt Hon John Howard MP, and the Prime Minister of Papua New Guinea, the Rt Hon Sir Michael Somare GCMG CH MP.

The Isurava Memorial commemorates those Australians and Papua New Guineans who fought and those who died on the Kokoda Track in 1942. Isurava is the site of some of the most intense fighting on the Kokoda Track during WWII. It was here that Private Bruce Kingsbury performed an act of valour for which he was posthumously awarded the Victoria Cross - the first VC on what was then Australian administered soil.

The photograph is courtesy of Hewitt Pender Associates and was supplied by the Office of Australian War Graves, Department of Veterans' Affairs.



Michael Owen VK3KI  
President, Wireless Institute of Australia

## Who is doing what?

As I write this, it is just two months since the former Federal Council voted to pass the Special Resolution that gave the WIA a new Constitution and a single national WIA with a new board of directors.

I would like to tell you something about what we are doing, and how we are doing it.

### The Office

On the administrative side, the national office at 10/229 Balaclava Road, Caulfield is now working from 9 am to 4 pm, though we do ask that phone inquiries be made between 10 am and 4 pm.

The subscription year starts each July, and on 12 July we started posting the renewal notices for July. Usually they would have been posted in June, but they were delayed this year because of the changes to the WIA structure.

A number of people have contacted the office, concerned that they had not received their renewal notices. We are sorry, but we hope that by the end of the month we will have sent out renewal notices for everyone whose subscription became due in July or will become due in August.

One further problem this year is that we do need the slip that is the bottom half of the renewal notice signed and returned to the office. Many are sending them back unsigned, and that means we have to write another letter asking for a signature. It is all taking a lot of time, so please help us this year by returning that slip with your signature.

Apart from the office, who is doing what?

### Publications

On many important matters, a particular director has been identified as having primary responsibility.

Responsibility for publications, Amateur Radio and the Callbook, has been given to Ted Thrift, VK2ARA. I am sure that a good flow of information in both directions between the Publications Committee and the Board will help everyone, so Ted's role is very much a liaison role, but making sure that the Publications Committee is given as much help as possible.

### Broadcasts and website

The Board recognises that information on what is happening is extremely important, not only through this magazine, but also through the broadcasts and the WIA web site.

The Director given broad responsibility for broadcasts and the web site is Ewan McLeod, VK4ERM, though he has been helped by a small number of people who have given a great deal of time to bringing our web site, [www.wia.org.au](http://www.wia.org.au) to a new standard, and placing all sorts of information on it in a timely way.

Our inaugural truly national broadcast took place on 25 July, with QNews changing its role and name to WIANews. The response was really encouraging.

The broadcast is carried under our new callsign, VK1WIA. As I said in the broadcast, it is very hard to think of a more appropriate callsign, with the WIA becoming a single, national body, than VK1WIA. VK1 is also significant, as with the adoption of the new Constitution, the last link of the WIA as a company with a state was lost, as the company

is now administered completely under Commonwealth legislation.

I would particularly thank Graham Kemp, VK4BB, and his team, not only for their totally professional approach but also for their enthusiasm for helping us make a "one WIA".

### QSL Bureau

The WIA has made a promise to the Divisions that it will provide a QSL Bureau service at no charge to members, and Ewan McLeod has responsibility for this project. Ewan is consulting with the various people involved in the QSL services in the different states, and is developing a plan as how to use the existing resources to best advantage, and at the same time see if there are any economies or efficiencies that can be used.

### BPL

One very important issue is BPL, or broadband over powerlines. Phil Wait, VK2DKN, is the director primarily responsible for this. In fact, as I write, Phil is in the UK, and has visited the RSGB at Potters Bar, and some prominent members of the RSGB and Region 1 to discuss that issue, as well as to learn more about the UK experience of the foundation licence, and of the progression of those licensees.

Phil is working with a small group on this important matter, and making sure that up to date information about the issue is placed on the web site.

### Contests

Trevor Quick, VK5ATQ, is the director responsible for contests and the like. He has been busy with the upcoming RD contest.

### Spot frequencies

The director taking responsibility for developing the WIA case for spot

continued on page 5

# Band-pass filters for the HF bands

By Peter Kloppenburg VK1CPK

Band-pass filters are most efficiently and effectively used when two or more transceivers are used in close proximity to each other such as at field days and contests<sup>3</sup>. Each nearby transceiver's output contains broadband phase noise<sup>2</sup>, harmonics, and other RF distortion products that interfere with another receiver's input circuits. Band-pass filters provide discrimination against these unwanted signals by steep-skirted selectivity while achieving a flat-topped frequency response.

Skirt selectivity is specified as shape factor that is the ratio of -6 dB to -60 dB bandwidth. Shape factors can be as low as 1.2 to 1. These filters are designed for one amateur band only, such as the 80-, 40-, or 20-metre band. The pass bandwidth ranges from 750 kHz on the 160-metre band, to 11 MHz on the 10-metre band, with less than 0.5 dB of insertion loss. Rejection, or insertion loss, at the adjacent bands is usually greater than 30 dB. These band-pass filters are designed for 50 ohm input and output impedance, and are connected between the transceiver and the feedline to the antenna. If a linear amplifier is used, the filter is connected between the transceiver and the linear amplifier. The filters discussed here can easily handle 100 watt of thru-power.

Band-pass filters provide protection against many types of interference caused by nearby transmitters, which would otherwise result in desensizing, imaging, third-order harmonic distortion, and overloading at the input circuit of a receiver.

There are many different types of band-pass filters<sup>5</sup>. Some are easier to construct than others. But, when used with transceivers, the insertion loss of the filter must be at an absolute minimum. An insertion loss of less than 0.5 dB is acceptable in most circumstances. The Butterworth type of filter is easy to construct, has a flat pass-band, and with careful selection of components results in having an insertion loss of less than 0.5 dB at the centre of the pass-band.

The type selected is a three-pole,  $\pi$ -section. Three-pole means that there are three tuned circuits in the filter. The  $\pi$ -symbol means that one of these is oriented horizontally, the other two are vertically oriented. Refer to Figure 1.

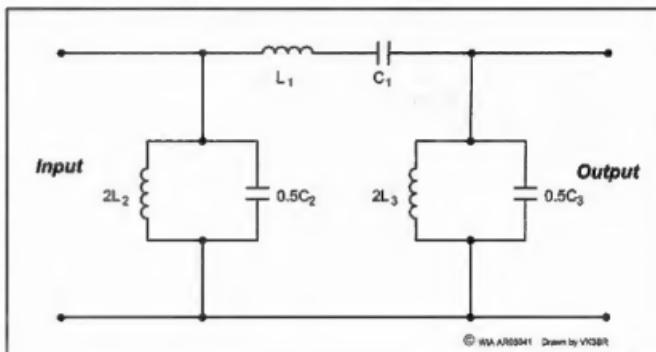


Figure 1. Circuit diagram of the 3-pole,  $\pi$ -section band-pass filter.

The more poles, the steeper are the pass-band skirts and the higher the insertion losses.

## Project Construction

All the components of the filters fit within a small die-cast aluminum box. The preferred type is the Eddystone Radio model 6809P, which has dimensions of 120 x 95 x 55 mm. The inside is divided into three chambers using panels made of brass or aluminum sheeting. This is necessary to prevent capacitive coupling between the tuned circuits, and thereby broadening of the pass-band skirts. A tiny hole is made in each dividing panel to allow a connecting wire to pass through.

All the coils are hand-wound, preferably with silver-plated wire (B&S 16). Tinned copper wire is an alternative, but enameled wire is least desirable, as it is lossy at HF frequencies. The wire diameter should be between 1 and 2 mm, so that the coils can be self supporting within the circuitry. Turns are spaced about one wire diameter

and the coil shape should be square i.e. length = width, to obtain the highest possible Q.

When the filter input is 100 watt, the capacitor and the coil in the series resonant circuit operate at about 350 volt, and should have a rating of 500 volt. The capacitors and coils in the parallel circuit have circulating currents of 3 amp. These high voltages and currents appear only across and within these components, not at the input or output of the filter.

## Formulas and Calculations

Below are the formulas<sup>3</sup> for calculating the values of Ls and Cs for the different bands:

$$\begin{aligned}L_1 &= R/\pi(F_2 - F_1) \\L_2 &= R(F_2 - F_1)/4\pi F_2 F_1 \\C_1 &= (F_2 - F_1)/4\pi R F_1 F_2 \\C_2 &= 1/\pi R(F_2 - F_1)\end{aligned}$$

These formulas apply equally to constant-K,  $\pi$ -section and T-section filters. However, the component values

obtained from these formulas are either halved or doubled, depending on which type of section is used<sup>5</sup>. The resonant frequency ( $F_r$ ) and the bandwidth ( $F_2 - F_1$ ) at the -3 dB levels have been selected so as to provide nominal values for  $C_1$ ,  $C_2$ , and  $C_3$ .

The result of calculations for the components in Figure 1 are given in Table 1.

## Tuning and testing

The minimum test equipment required for aligning the tuned circuits of each filter is a Gate- or Grid-dip Oscillator<sup>6</sup> (GDO). Such a device will indicate the resonant frequency of a tuned circuit while the coil in the device under test (DUT) is being squeezed or stretched. Provided that the tolerance of its associated capacitor is within 5%, the coil and capacitor (LC) combination can be made to resonate very close to the required frequency.

To prevent interaction between the three tuned circuits, each LC combination should be disconnected from the others while it is being tuned to resonance. The series LC combination should be connected as a parallel LC combination while it is being tuned to resonance. When all three LC combinations are tuned to resonance, they can be connected as per Figure 1.

Band (MHz)	$C_1/C_2$ (pF)	$C_1$ (pF)	$L_1$ (H)	Turns	$L_2/L_1$ (H)	Turns	$F_r$ (MHz)	$F_2 - F_1$ (MHz)
1.8	4000	400	2.2	20	22	95	1.75	0.723
3.5	2000	200	1.1	10	11	48	3.38	1.44
7	1000	100	0.55	5	5.5	27	6.78	2.89
14	500	50	0.28	4	2.8	16	13.56	5.68
21	330	33	0.18	2.5	1.8	11.5	20.65	8.84
28	250	25	0.14	2	1.4	9	27.39	11.37

Note:  $R = 50 \Omega$ . All capacitors are silvered mica types, 500 volt working, available from Radio Spares in preferred values.

Coil diameter: 18 mm

Table 1

A final alignment test is to measure the insertion loss of the filter. This should be no more than 0.5 dB. With 100 watt of input power, output should be no less than 89 watt.

Tuning and testing is much easier and accurate when a signal generator and an RF voltmeter are available.

A visual image of the pass-band can be obtained by using a sweep generator, a detector, and an oscilloscope. A set-up like that will show the width of the pass-band, and how much rejection is provided at other frequencies.

## References

1. L. Gordon, "Band-pass filters for HF transceivers" QST September 1988

2. J. Grebenkemper, "Phase noise and its effects on amateur communications" QST March/April 1988

3. T. Mollere, "Band reject filters for multi/multi contest operation" CQ Contest, Feb. 1998

4. ARRL Handbook 1995/6/7 Chapter 16

5. RSGB 'Radio Communications Handbook' 5th Edition Vol. 2, Page 23.10

6. D. Diamond, "Kalitron" Gate Dip Oscillator/crystal checker. Amateur Radio, March 2003

BR

## WIA comment continued

### Who is doing what?

*continued from page 3*

frequencies around 5MHz is Glenn Dunstan, VK4DU.

### New syllabus

Glenn is also helping Phil Wait and Ernie Hocking to develop the WIA's proposals and position for a new syllabus and the vitally important opportunity for outsourced work from the ACA.

### Insurance

Secretary, Peter Naish, VK2BPN, is responsible for investigating the insurance issue, another promise made by the WIA to the Divisions, to, if possible, find a cost effective policy that will adequately cover the WIA, and its volunteers and also be available for the clubs.

## Marketing

Treasurer David Pilley, VK2AYD, and Vice President Ernie Hocking, VK1LK, have the task of developing a marketing plan for publications, badges and the like, and Ernie with Phil Wait has the task of developing a much broader marketing plan, addressing other marketing opportunities to enhance the future role of the WIA.

## Last but not least...

When I started to write this, I attempted to mention, where I thought it appropriate, some of the many people who give their time and expertise to benefit us all through the WIA, but then I rapidly realised that I was simply going to overlook more people than I would mention. It is really staggering how many people give their time for amateur radio.

So, this note is really to give you some idea of the areas of responsibility of the different directors.

It is also very appropriate, as this issue of AR in fact marks the next step in the evolution of a truly national WIA, with a directory on the last page of the Advisory Committees and the broadcast time and frequencies of the national WIA broadcasts from VK1WIA.

Finally, a personal note. To all of you who taken the trouble to send us your good wishes and to let us know that we have your support in what we are doing in establishing a single WIA, I thank you.

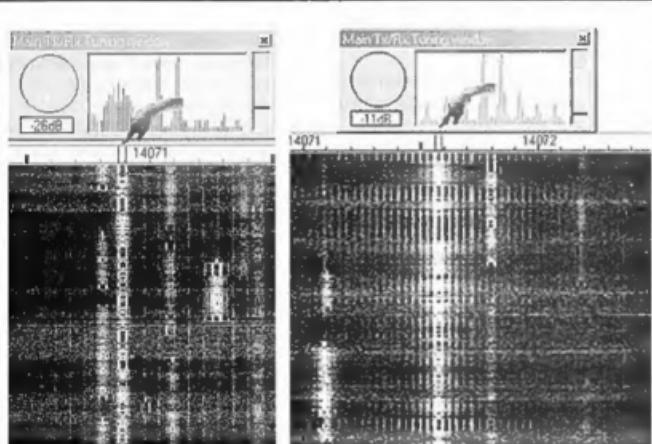
With the support of so many people of goodwill we have every chance of securing a better future for amateur radio.

ar

# RSQ: an improved signal reporting system for PSK

By Graeme Harris, VK3BGH

Narrow band digital modes have become more popular on the HF bands in recent years and have seen an increase in more casual keyboard style QSO's. Today, PSK31 leads the way with keyboard chatting, RTTY remains popular, and an increasing number of other PC sound card based digital modes are seen on the bands. This article suggests that Readability, Signal Strength and Tone (RST) no longer provides a meaningful signal report for these newer modes and is particularly unsatisfactory for PSK. An improved signal reporting process is now needed to keep pace with the evolving digital revolution in Amateur radio, and the popular PSK modes are seen to provide an opportunity to springboard a change.



## Good quality BPSK31 transmission

The image above shows a range of signals, with the chosen signal highlighted by the pointer and two parallel lines. The waterfall display shows the clean profile of this signal. The related spectrum display extends +/- 500 Hz from the selected trace.

This trace would rate a Q9 report according to the RSQ reporting table.

There is a total of six traces to be seen in this waterfall display with some only just visible, and most occupying the normal bandwidth of approx 60Hz. However, the short trace to the centre-right is starting to exhibit an additional unwanted sideband pair.

Although these screen images do not reproduce particularly well in black and white, the quality of PSK traces is easily observed on normal colour screen waterfall displays.

## Poor quality transmission

This image demonstrates a bad signal, unfortunately all too commonly seen! The signal is generating multiple sidebands, taking up more bandwidth than necessary, and causing interference to fellow amateurs.

The spectrum display (+900Hz and -600Hz) clearly shows the multiple signals emitting from this station.

This trace would rate a Q1 report. There are four traces in this display and the traces on either side of the (indicated) poor signal are being subjected to its multiple sideband QRM.

Any DX traces within 100 to 200Hz of the poor signal would be almost impossible to decode. The gross distortion of this signal would also be very audible on the band.

"Your report is 5 and 9 OM - please repeat name and QTH!"

There seems little value in receiving a 59 or 599 report when the other station is obviously struggling to hear you. Despite the lack of meaning in such reports for SSB and CW, a further situation exists for PSK where the traditional RST format is clearly inadequate to describe the error content of received text, signal strength on a busy band, or quality of the actual transmission itself. A particularly unhelpful aspect is where operators with poor quality transmissions receive T9 reports as a matter of course even though their signals are broad and distorted with the potential to QRM adjacent QSOs.

So what really constitutes a readability of 3, 4 or 5 for PSK text decoding on your screen? How do you interpret signal strength when there are several other signals within your passband or when a local station has pinned your S meter? And what is a meaningful and reliable measure for the quality of a transmitted PSK signal? These are the questions that have been the basis of most debate since PSK31 was introduced in 1998. Various solutions have been proposed but unfortunately none has produced any serious new direction for change.

Late 2002, a small group of operators decided to propose a new signal reporting system for PSK and assemble a website in support of its implementation. "PSB" (Print, Strength, Bandwidth) reporting was developed, advertised and used on-air by the development team, during which time it also underwent peer review via a list of dedicated mailing subscribers and the PSK31 group site at Yahoo.

"RSQ" (Readability, Strength, Quality) is a subsequent development of the PSB

system. It provides the same improved reporting outcome as PSB and uses terminology more closely aligned to that of traditional RST.

Just as RST describes the tone of a CW signal in terms of the presence of unwanted modulation heard as hum, key clicks, chirping etc, so RSQ describes the quality of a PSK signal in terms of the presence of unwanted modulation observed as additional unwanted sidebands. This is the most significant departure of RSQ from traditional RST.

### RSQ Reporting Table

Readability is the percentage of decipherable text.
Strength is a visual measure of the waterfall trace.
Quality attempts to describe visible unwanted sidebands.

S meters measure the average strength of all signals in the receiver passband. So for regular situations where multiple signals are present, and narrow band IF filtering is not applied, then a *visual* measure of waterfall trace or spectrum amplitude is more meaningful for the strength of the decoding signal.

When viewing the quality of very strong signal traces, well-suppressed additional sidebands may be seen above the noise floor. In this case, an inter-modulation distortion (IMD) reading may assist in determining their status. If the IMD reading is about -25dB or better, then any additional sidebands can be assumed as below the interference threshold, disregarded, and a Q9 report given. If the IMD reading is about -20dB or worse, then the additional sideband modulation is undesirable, may cause interference to other stations, and an appropriate value from the quality table can be applied to the report.

PSK software usually provides the facility to measure IMD, however many operators are unaware of the limitations of its practical use. The measurement of very strong signal IMD mentioned above is reliable providing the measurement is taken when the signal is at idle, as occurs during a pause at the keyboard or during the brief tail at the end of each PSK transmission - and even then, only after careful adjustment of receiver gain settings.

It is therefore suggested however that IMD readings only be given to the

other operator when requested, and then only as a supplementary report. The following explanation is from Howard (Skip) Teller KH6TY who developed the first panoramic PSK31 transceiver and Digipan software: "IMD is the measurement of the first pair of unwanted sidebands to the desired ones, and if the signal to noise ratio is not around 25 dB, you will start to measure the noise instead of the unwanted sidebands, which will be under the noise threshold. Also, if there is any distortion in the receiver, you create a false IMD reading. Whenever I measure a station's IMD, I have to be sure the S/N is good, and then I reduce the

RF gain of my transceiver until the IMD stops falling and starts rising. At this point, I believe I have almost eliminated IMD caused by the receiver distorting the signal".

Further information about the RSQ scheme can be found at the [http://www.psb-info.net/\\_website](http://www.psb-info.net/_website) which also outlines the original PSB report and supporting information. Here you will find a station setup checklist to assist operators to achieve a clean PSK signal and a PSK31 signal modeling treatment as a basis for that checklist. Colour screen shots and audio clips of a range of signal traces of differing quality are also provided for reference.

Since PSK IMD readings are difficult to reliably measure at the receiving end, a simple test bed has been described to allow operators to measure the IMD and bandwidth of their own transmitted signals. There are also pages for News, Future Plans and links to information on digital mode sound card interfaces and related topics.

The website was revised November 2003 to make the reporting process independent of the PSK baud rate and to introduce the new RSQ development.

It is recommended that operators mention the site URL for reference and

### READABILITY

R5	95%+	Perfectly readable
R4	80%	Practically no difficulty
R3	40%	Considerable difficulty
R2	20%	Occasional words distinguishable
R1	0%	Undecipherable

### STRENGTH

S9	Very Strong trace
S7	Strong trace
S5	Moderate trace
S3	Weak trace
S1	Barely perceptible trace

### QUALITY

Q9	Clean signal - no visible unwanted sideband pairs
Q7	One barely visible pair
Q5	One easily visible pair
Q3	Multiple visible pairs
Q1	Splatter over much of the spectrum

further information when providing RSQ reports during a QSO until the new reporting scheme is more widely understood.

The format of the 3 data elements of an RSQ report continue to satisfy the traditional RST requirements for manual and computer logs, QSL cards and PSK software. RSQ is not recommended however for chasing elusive DX or regular contesting until wider acceptance is achieved.

RSQ can improve the value of PSK signal reports and help reduce excessive bandwidth and distortion. The reporting process is intuitive and provides more useful information for stations wishing to better understand the overall status of their signal.

This article has described RSQ as an attempt to improve signal reporting for the various PSK modes, and offers it as an alternative to the traditional RST report. Your comments on this proposal and the best way to promote it would be appreciated. Please provide feedback to <http://www.psb-info.net/Feedback.htm>.

73 from the development Team:  
Bob K6MBY, Graeme VK3BGH, Ian GM4KLN, Milton W8NUE

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- Ten-Tec's new Panoramic Stereo receive feature
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## TEN-TEC ARGONAUT



Frequency range: TX: 10-160 m •

WARC

RX: 0.5-30 MHz

Mode: AM/FM/SSB/CW/AFSK

RF Power output: 1.2W

Sensitivity: SSB/CW: 0.2-0.35 uV (10 dB SINAD @ 2.4 kHz bandwidth)

AM: 0.5-0.9 uV (10 dB SINAD @ 6 kHz bandwidth)

FM: 0.35-0.6 uV (12 dB SINAD @ 15 kHz bandwidth)

Selectivity: 35 built-in filters SSB/CW: 200-3000 Hz AM: 400-8000 Hz FM: 15 kHz. Image rejection: 80 dB. Voltage: 13.8 VDC

Current drain: RX: 950-7 mA

TX: Max 6 A

Impedance: 50 ohms, SO-239

Dimensions (WHD): 216\*70\*246 mm

Weight: 2.2 Kg

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Interface



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## TEN-TEC RX340

### Professional Communications Receiver

• Modes AM, SAM, LSB, USB, ISB, CW, FM

• Tunes 5 KHz to 30 MHz. +/- 1 ppm frequency stability. • User programmable AGC

• Selectivity 57

bandwidths selectable

from 0.1 KHz to 16

KHz.

• Meter Calibrated in

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S Units • External IF and digital (DSP data) outputs • Both balanced &

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"... reports I was given were from 5x5 to 5x9+ on eighty and forty meters QRP. I am told it sounds like 100 watts is being used - my slogan now is 'the Box that brought my amateur radio hobby back to life'"

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## SG-237 HF-VHF SMARTUNER™

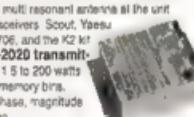
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up to 26 dB of noise reduction



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# A direct reading inductance meter for radio coils

Drew Diamond, VK3XU  
45 Gatters Road,  
Wonga Park, 3116.

Of all the electrical quantities that the experimental amateur must measure, that of inductance is possibly the most problematic. To get an accurate idea of the inductance and quality (*Q*) of a coil, particularly where a magnetic core is involved, it is desirable that we test the coil at or near the intended operating frequency.

The ideal tool (for the amateur) remains the "Q" meter, where the coil is generally examined at a suitable frequency, but these are extremely rare and highly prized items. "Laboratory" LCR bridges and digital meters generally make the measurement at some frequency (often 1 kHz) far removed from the application frequency, and so significant errors may occur. Furthermore, the popular digital meters seldom provide sufficient resolution below about 20  $\mu\text{H}$  (micro-henries) for serious radio work.

A much better approach is to use the 'resonance' method where the unknown inductance is resonated at an appropriate

frequency with a variable capacitor whose dial is directly calibrated in terms of inductance. Measuring range is increased if a choice of two or more test frequencies is available.

In recent years we have seen, in Amateur Radio and other journals, details of inductance meters using bridge (Ref 1), resonance (Refs. 2–5) and digital methods. Bridge and resonance meters require some means of calibrating the instrument, generally a pretty good collection of chokes and coils of (hopefully) known value. And cheap digital meters (in my experience) have poor resolution as we get down into the micro-henries.

The problem of calibration can be overcome if a variable capacitor of the ubiquitous 95 + 205 pF type is used, the prototype's calibration being sufficiently accurate for amateur work. Measuring range is from less than 0.33  $\mu\text{H}$  (micro-henries) to 150  $\mu\text{H}$  (micro-henries) in three ranges, which should cover just about any coil encountered in high-frequency work. Although not offering direct *Q* measurement, the meter provides a very useful indication (by comparison, for instance) of the "Q-iness" of a coil, as shown by the sharpness and amplitude of the meter deflection.

Unfortunately, practical coils of larger than (about) 150  $\mu\text{H}$  (micro-henries) become increasingly difficult to measure accurately by this method because the unwanted (but real) inter-winding capacitance cannot easily be separated from the resonating capacitor's value.



Photo 1 – Direct reading inductance meter.

## Circuit

A crystal of 2, 6 or 20 MHz (being ranges 3, 2, and 1 respectively) is made to oscillate with a 2N5484 FET (see Fig 1). The near sine-wave signal at the source is coupled via a 1 pF capacitor to the 300 pF variable capacitor, across which the unknown inductor "LX" is connected. When the capacitor and inductor are "in resonance", the RF signal voltage developed across the circuit will increase enormously.

A second 1 pF capacitor couples this voltage into a simple two-diode detector, where the 10 nF capacitor charges to a level roughly proportional to the signal voltage obtained. The dc voltage developed is applied to the 100 K (sensitivity) pot, where a manually

adjustable portion may be applied to the input of a popular LM-386 chip, configured as a dc (or servo) amplifier. The '386 thus provides us with a handy dc amplifier without need of a dual polarity supply. A 1 mA meter is connected in a virtual bridge circuit. With no dc signal applied to the (+) input pin 3, the output (pin 5) rests at about half supply (4.5 V), the bridge is "balanced". When a small dc signal is applied (as a result of resonating a coil), pin 5 moves in a positive direction, so unbalancing the bridge and proportionately driving the meter.

## Construction

My prototype model is housed in a black plastic sloped "console" enclosure measuring 189 x 134 x 32 mm, but any metal or plastic case of similar dimensions would do. A suggested "paddyboard" [Ref. 6] layout is shown in Fig. 2 and Photo 2. Layout is not particularly critical, just about any preferred wiring method will suffice, provided that RF signal carrying connections are reasonably short, especially those to and from the LX terminals and variable capacitor.

The '386 chip is fitted into an 8-pin DIL socket, which is soldered upon a substrate, tracks upwards, made from a 25 mm x 4-strip Vero off-cut. The 'lands' of the substrate must be divided down the middle with a single junior hacksaw cut. The pins of the socket poke through the Vero, so a similarly sized rectangle of plain circuit board should be sandwiched between, foil side down, and super-glued to the circuit board.

If you use the same capacitor type as in the prototype, the calibrations shown in Fig. 3 may be photocopied and affixed to the front panel. The cursor shown in Photo 1 was cut from 3 mm Perspex sheet using a rod-saw, then cleaned up in a poor man's lathe, drill a  $1/4"$  (6mm) hole dead centre, insert a  $1/4"$  (6mm) Wh bolt and nut, fix in the chuck of an ordinary electric drill which in turn is held in a vice. Gently apply a smooth file to the rotating disc and thus smooth up the disc's perimeter.

Using a sharp scriber and steel rule, carefully scribe a line across the diameter for your pointer line, which may be filled with black crayon then polished to improve contrast. The disc may now be attached, with epoxy or hot-melt glue, to

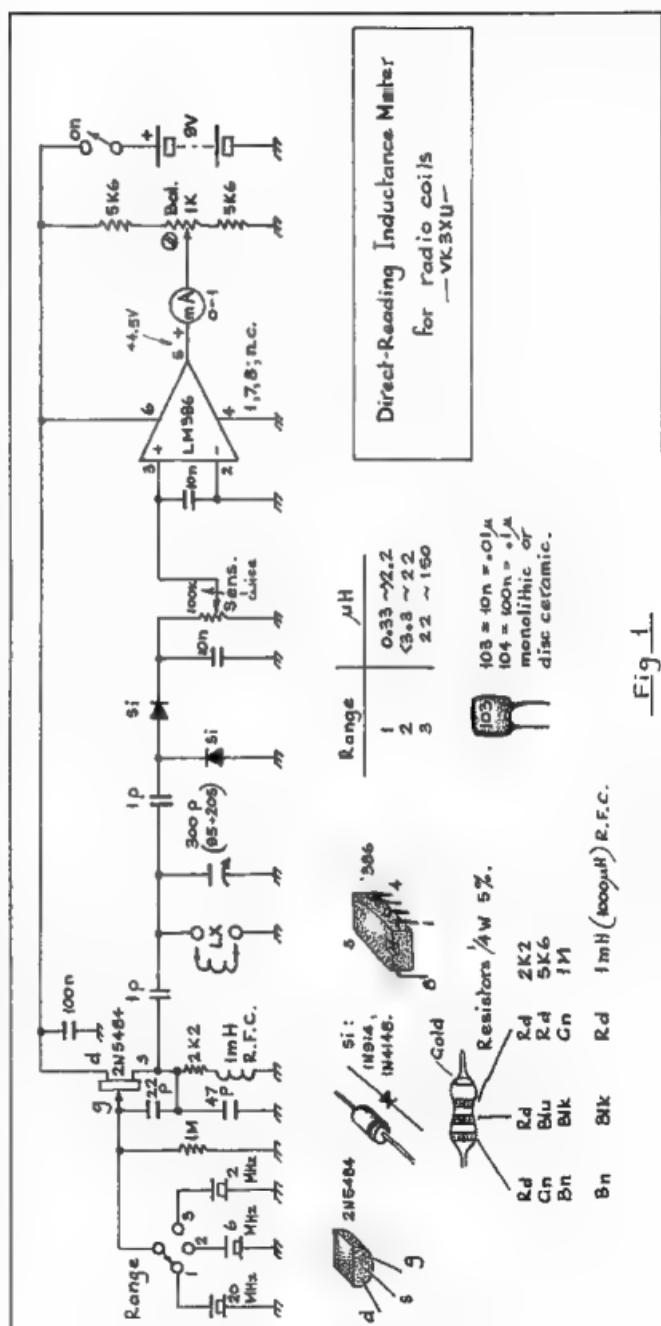


Fig. 1

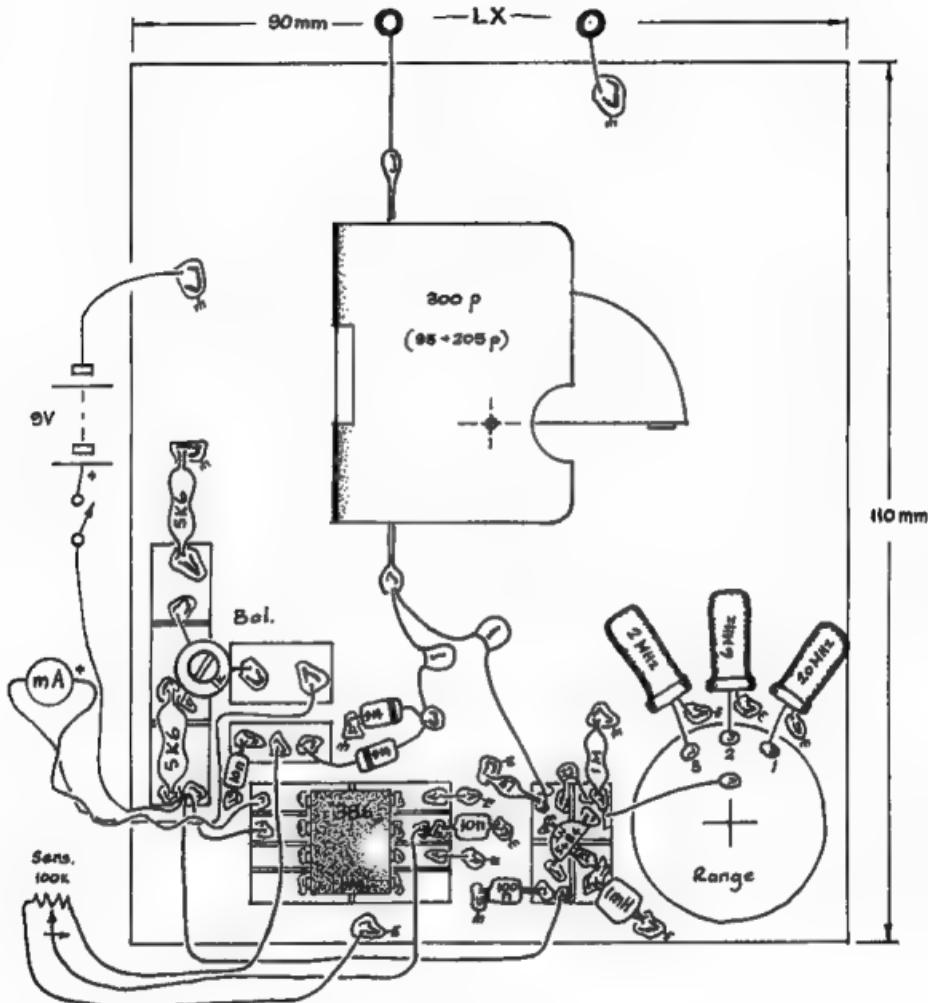


Fig. 2

the skirt of a suitable knob, temporarily insert a scrap of 1/4" (6mm) rod (eg a pot shaft off-cut) through the disc and into the knob to assure correct alignment.

## Operation

Before you apply battery power, do a thorough parts placement, polarity (particularly the '386) and wiring check. If an oscilloscope or counter

is available, apply a high impedance probe to the source of the FET and observe a fair sine wave and/or correct crystal frequency. Otherwise, tune to the crystal's frequency on a general coverage receiver. Adjust the (balance) pot for zero deflection on the meter.

Connect a known good inductance to the LX terminals, set the sens. pot to about mid travel, select an appropriate

range, and then sweep the capacitor's dial around the estimated value of the inductance. For moderate to high Q coils, you should obtain a sharp, pronounced peak, whereupon the coil's inductance may be read (or interpolated) from the calibrated scale. The meter's deflection may be adjusted to a convenient level by use of the sens pot.

## Summary

The experimental amateur often needs to measure the value of inductance coils. However, popular, cheap LCR meters generally lack the necessary resolution as we get down into the microhenries, typical in HF radio work. Furthermore, most accurate results are obtained when the coil is tested at some frequency that is near its intended operating frequency.

A practical model has been outlined which employs the 'resonance' method, whereby one of three crystal frequencies is used for the measurement of inductances from about 0.3 to 150  $\mu\text{H}$  (micro-henries), and also provides an indication as the "Q-iness" of a coil. The need for individual calibration is dodged by specifying a common variable capacitor type for the resonating component.

## Parts

Most of the electronic components are available from our familiar parts suppliers, including Altronics, Electronic World and Jaycar. The case may be a Jaycar HB 6094 or similar. For convenience, it is suggested that the 9 V battery be installed in a PH 9235 battery holder mounted upon the outside of

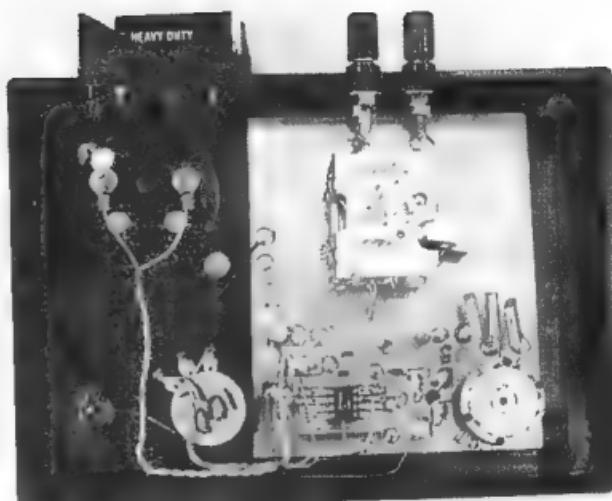


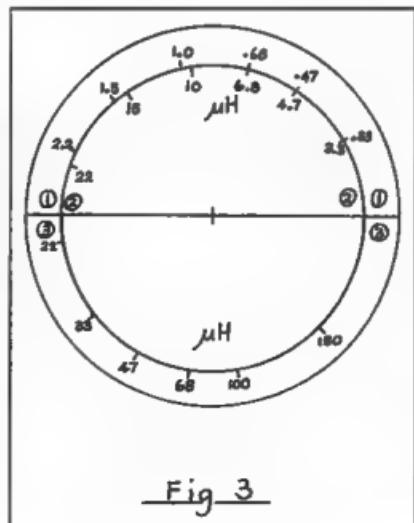
Photo 2 - Internal view.

the case. The range switch may be 3-position rotary type SR 1210 or similar. The variable capacitor is of a kind often seen at ham-fest sales and swap meets.

However, if you cannot locate a suitable capacitor, drop me a line at the address shown above, and I will be pleased to send you one for the cost of postage.

## References and Further Reading

1. "Little-L" Inductance Meter"; AR Nov. '92, pp 11,12.
2. "An RF Inductance Meter"; Butler, VK5BR, AR June '97, pp 7-9.
3. "The G4HUV Inductance Meter"; Scott, G4HUV, Rad Com Nov. '93, pp 40, 41.
4. "Nano-L" Inductance Meter"; AR May '97, pp 6-8.
5. "An Inductance Meter for Radio Coils"; AR Feb. '99, pp 12, 13.
6. ""Paddyboard" Circuit Construction"; AR, Feb. '95, pp 4-6.



er

Fig 3

## Vintage Radio Club

of North East Victoria Inc

The club was founded in 1989 and currently has 35 members aged from 16 to 90. It meets monthly, alternately in Benalla and Shepparton. Approximately half the members have amateur callsigns. Interests of members cover radio in general and the restoration of old radios in particular.

Applications for membership and other inquiries to :-

Geoff Coats,  
Club Secretary  
25/67 Samaria Road  
Benalla Victoria 3672

# The Secret War of Wireless

David A. Pilley VK2AVD

Have you ever wondered what your value as a Radio amateur is to your community and to your country? Let me tell you true stories of your importance during WW II.

You have probably all heard of Bletchley Park – the home of the Code Breakers. It is located NW of London in the county of Buckinghamshire. It was established by MI6 (Military Intelligence Division 6) and, prior to WW II comprised a small wireless section for communicating with overseas operatives and a group known as the Government Code & Cypher School (GC&CS).

At the outbreak of WWII the communications department was moved to Whaddon Hall (also in Buckinghamshire) and Bletchley dedicated itself to Code Breaking. The entire operations now became known as Section VIII.

There is a Trilogy that needs to be appreciated.

- (a) Obtaining the coded message
- (b) Breaking the code into intelligence and
- (c) Distributing the intelligence to those concerned.

It is (a), Obtaining the messages, where the Radio Amateur played a very important role.

At the outbreak of war, all Radio Amateur transmitters in the U.K. were impounded, but not the receivers. Wireless communications in these times were strictly telegraphy and anyone having knowledge of Morse code was immediately seconded. All Radio Amateurs knew Morse code as it was a requirement to obtain a licence.

Across the board you had young Amateurs who were ready to be conscripted into the military, those that were in reserved occupations and of course the "golden oldies".

Those ready to be conscripted were sent to Section VIII, the remainder were broken into various divisions around the country and asked to monitor certain

frequencies and pass the messages they received to a designated address in London. These people were known as Voluntary Interceptors (VIs) under a section called Illicit Wireless Intercept Organisation (IWIO). Their initial task was to listen on designated frequencies looking for enemy agents that may have landed in the U.K. They never ever found any and were soon given other tasks to listen to and record.

(Did enemy agents ever land in the UK? – As far I can find out they were captured on arrival and some turned to use their capabilities to assist the allies. There is a story of one notable

Intercept (VI)) was too much to write!

There were quite a few incidents with the VIs, especially with their neighbours who were reporting them as spies. Eventually they all carried special documents that explained that they were on special duty.

One of the problems realised was the equipment the VI's were using was not efficient and in many cases the receivers were of their own construction. Section VIII went to the USA and purchased a multitude of HROs, some SX 28s and a few AR 88s. Not just for the VIs, but for their entire operation. Incidentally, in 1942 an HRO cost \$US350 each.

"Y" stations and D/F stations were scattered around the world. In 1943 Beaumaror in England was the largest "Y" station, employing 900 ATS and 300 civilians manning five set rooms.

Most operators had two receivers. This was necessary as not every group of stations they listened to was on the same frequency!

In the UK alone Section VIII had 5 major communications centres with over 120 listening posts supported by 9 active D/F stations.

As well as recording the coded messages they also became familiar with the various operators. Like we all have different voices, so did the German operators have different fists for sending Morse code. Consequently these operators could be followed as they moved around Europe. This today is known as "finger printing" and voice recognition.

Those Radio Amateurs that were conscripted into the services and sent to section VIII to work were given special privileges and were not just on the basic military pay. Although they wore the uniform of the Royal Signal Corps, there



A B2 spy transceiver, in its original wooden case, that the writer used on the Amateur bands back in the early 50s. It was modified for voice and had a VFO.

agent that was dropped by parachute near Aylesbury in England, on landing he was knocked out by his radio that landed on his head!)

As far as I can determine from reading various books, over 1,500 Radio Amateurs were used for intercept work. Incidentally the IWIO name was changed to the Radio Security Service (RSS) and the operators were known as "Y" operators.

Where did the "Y" come from – typical government – the words "Wireless

# Radar band designations, old and new

Richard Sawday VK5ZLR (Dip. Eng. Electronics)

There always seems to be confusion about the band designations used for higher frequencies. This is a brief description of WW2, and post-war radar band designations.

Search radar was developed and called L-band (L for long wavelength)

Then when shorter wavelengths were used they were called S-band (S for short wavelength)

X-band radar was then developed for fire control (X marks the spot). These fire control and ranging systems reached a high level of sophistication during WW2 with automatic servo-controlled gun laying of multiple heavy guns. The US designed radar was the SCR-584, and the analog computer was the M-9 Gun Predictor. One radar and M-9 could control a battery of four guns.

Further development saw the introduction of C-band which was designed to have a combination of X and S band features (C=compromise)

K-band was introduced, however it was absorbed by water vapour, rain and fog. K=kurtz (German for short)

Ku-band and Ka-band got around the water problem. Ku = frequencies under K-band. Ka = frequencies above K band.

The first radars operated with metre-long wavelengths. The German Wuerzburg operated on a wavelength of 53 cm and Freya operated on a 1.8-2.0 metre wave length. These are called P-band (P for Previous). P-band radar is seeing a resurgence of interest, and currently being used for EW (electronic warfare) systems.

A new naming system has since been introduced, however it has only created confusion, because of similar alphabetical labels. Many people just stick to the old system.

## Radar band designations, old and new

Old V-band	=	New A band	0-250	MHz
Old P-band	=	New B band	250-500	MHz
Old L-band	=	New C band	500-1000	MHz
Old I-band	=	New D band	1-2	GHz
Old S-band	=	New E band	2-3	GHz
Old S-band	=	New F band	3-4	GHz
Old C-band	=	New G band	4-6	GHz
Old C-band	=	New H band	6-8	GHz
Old X-band		New I band	8-12.4	GHz
Old J & Ku-bands		New J band	8-10	GHz
Old K-band		New K band	12.4-18	GHz
Old Q & Ka-bands		New L band	10-20	GHz
Old U-band		New M band	18-28.5	GHz
Old V-band		New N band	20-40	GHz
Old E-band		New O band	26.5-40	GHz
Old W-band		New P band	33-60	GHz
Old T-band		New Q band	40-60	GHz
		New R band	50-75	GHz
		New S band	60-140	GHz
		New T band	80-90	GHz
		New U band	75-110	GHz
		New V band	110-170	GHz

## The Secret War of Wireless continued

was really no rank or direct military discipline forced upon them.

Some Amateurs were involved with the mobile units known as SCUs. These mobile units were initially built in Packard sedans. They travelled in reasonable comfort! These units were used as forward listening posts and in many cases, employed overseas in such places as North Africa.

Many Amateurs were responsible for designing and constructing the various "spy" transmitters and receivers used by agents. Most of these were crystal controlled and with power outputs of just a few watt. You can imagine an agent, surrounded by the enemy,

having to put up an antenna, then transmitting as fast as he could before the enemy D/F got them. There were terrible fatalities. The most saddening story was in Holland where the Germans had turned the agents and 47 of the 51 agents dropped were executed as well as members of the Dutch Underground. 12 aircraft and 84 crew members that flew the special missions were also lost.

However, back to the Section VIII. You may be interested to know that in 1941 decrypts rose from 30 to 70 a day. By December 1942 to 280 and in May 1944 it peaked at 282. A total of 268,000 RSS decrypts was made during 39-45.

There are many stories to be told. For those of you interested in this great story, you will find most of what is written above in a wonderful book "The Secret Wireless War", the story of MI6 Communications 1939-1945 written by Geoffrey Pidgeon. ISBN 1-84375-252-2

Did "Y" work carry on after the war. Yes, but that's another story.

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## Technical Abstracts

Peter Gibson VK3AZL

# The copper loop for 2 metres – addendum

Since we published the article on the Copper loop in Technical Abstracts in *Amateur Radio* May 2004 (page 46), we have had an inquiry from a reader as to the correct way of mounting the loop to the support pole. The text as published gives all that was written in the original article. The additional mounting details were contained in the accompanying pictures, which we are not able to adequately reproduce here.

The only practical location to mount the loop is about the centre, where the coax connector is mounted as shown in Figure 2. The mounting plate is detailed in Figure 1, with the word 'top' defining

the top of the plate when mounted on the support pole. When the loop is in the vertical plane, this plate is attached to the loop with a pair of U bolts in the smaller holes. The plate is mounted on the other side of the loop tube to the plate holding the connector with the gamma rod in the middle. In Figure 2, the connector plate seems to be shown on the wrong side of the tube. If it is located on the other side of the tube, the gamma rod will be parallel with the main tube and it will leave clearance for the support plate to be mounted opposite it. Unfortunately the pictures were required to show all of this clearly.

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## Technical Abstracts

Peter Gibson VK3AZL

### A parallel wire dipole

In the 'Hints and Kinks' section in QST for October 2003, Bob Schetgen, KU7G, describes a multiband dipole he has been building for others. It can be used in either the flat top or inverted V configuration. Figure 1 shows the overall layout of the antenna.

The centre insulator (no balun) used in this case is from a supplier in the US called 'Wireman' (#800 at [www.thewireman.com](http://www.thewireman.com)) but other similar units are available elsewhere. This one is as shown in Figure 1 with the SO-239 connector on the bottom. An alternative would be to use a combined centre insulator/balun at this point. All of the other components are fairly conventional and should be available from a number of sources. The weed trimmer line is stiffer and therefore neater than the lighter alternatives, although they could be used if necessary. The bare stranded 80 metre wire serves as the 'messenger' cable and supports the rest of the antenna.

When purchasing the wire, check the diameter of both sizes before buying the drills to drill the spreaders. The sizes need to be as close in diameter as possible; you'll see why below. The bottom wires are spaced a bit from the top one (see Figure 2) to lower the centre of gravity of the assembly and stop it from twisting.

After drilling and cleaning the holes, cut two wires for each band, remembering to allow a little for terminations and trimming later. The lengths are given in Table 1. Note that these lengths are for US phone bands and allowance should

be made for where you want to use the antenna on each band.

It is best to cut the wires and thread them through the spreaders first. Lay out the wires as per Figure 1, with 80 metre on top and the higher bands below in succession. Thread the first spreader on, making sure you are using the top hole and the bare wire for 80 metre. Once you have all of the wires started through all of the spreaders on one side, pull about 2 feet of the wires through the spreaders. When this is done, strip about 4 inch of insulation off each of the bottom wires. If you are not using thimbles, it is recommended that one be used as described below as they reduce wire fatigue.

Place the thimble through one of the eyes on the centre insulator. Tin about 6 inch of the bare 80 metre wire using a suitable high powered soldering system, then let it cool. Wrap the tinned wire around the thimble but leave about 3 inch extra from the thimble junction before starting the wrap (see Figure 3). Start a tight wrap for 3 or 4 turns. When finished, apply more heat and solder to the junction to fill any voids, although don't apply too much heat, otherwise you may soften the wire.

Next, place all the wires flat as they would hang from the top. Make sure

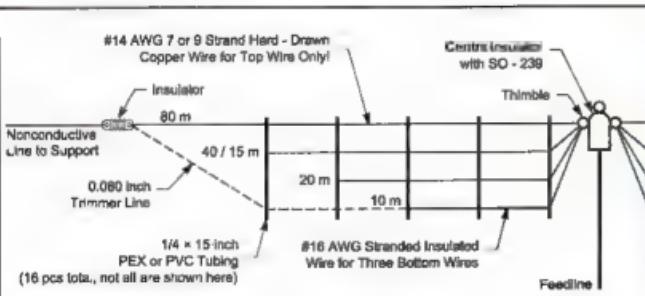


Figure 1 – The parallel wire dipole.

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are equal. Now, find a pair of end insulators and install them on the ends of the 80 metre wires. Pull 18 inch of wire through the insulator and loosely wind it back on itself. Do this on both sides. Connect the feedline and you are ready to test it. If you are not using a balun, and are using coax, make a shield choke near the transmitter by wrapping 6 loops of the coax and taping them together. A diameter of 8 inch is OK for small diameter coax, otherwise, use whatever diameter is suitable to the minimum bending radius of the coax you are using.

Hoist the dipole to operating height and test. When testing, measure the VSWR on all bands and record the results after each test. You need to keep track of how much the wires interact before final trimming for resonance. Leave an extra 1.5 inch on the outer end of each of the insulated wires. This is to allow for securing the wire end at the spreader. To do this, strip the insulation from 1.5 inch of the wire as above, twist the bare wire into a ball and apply some solder.

When adjustments are complete, it's time to run the trimmer line and glue everything together. Lower the antenna, and position the spreaders evenly. Fire up the 80 W hot glue gun while you are

feeding the trimmer line through the holes in the spreaders. Allow extra line for tying off at the insulator end. At the 10 metre end insulator, either make a loop around the spreader or drill another hole about 1 inch above the 10 metre wire, pass it through, make a knot and glue it.

Now, using the heavy-duty glue gun, get to work on the spreaders. You will need lots of glue sticks. Wear work gloves for the next bit as things can get hot. Start with the first spreader near the centre, on either side. Hold the spreader from the top, horizontally with your covered hand between the 80 and 40 metre wire or lay it on a table. Tilt it slightly upward so the 10 metre end is slightly elevated. Be careful not to let the wires slip from side to side as this will cause one or more wires to go slack. Insert the glue gun nozzle firmly into the top of the spreader. Squeeze the trigger, filling the entire length of the tubing. Don't stop until you see the glue coming out the other end and don't move it until the glue cools and starts to solidify.

Some of the glue will be squeezed out the holes where the wires and stringer line are passing through the insulator. This is OK. In fact, it's the reason why the bare wire was used for the 80 metre span. The glue forced into the wire strands help it stay in place.

Table 1  
Parallel Dipole Data

Band (m)	Leg Length	F0 (MHz)
80	80' 8"	3.880 MHz
40	33' 6"	7.225 MHz
20	17' 0"	14.280 MHz
15	(see 40 m)	
10	8' 7"	29.000 MHz

1' = 1 foot = 304.8 mm

1" = 1 inch = 25.4 mm

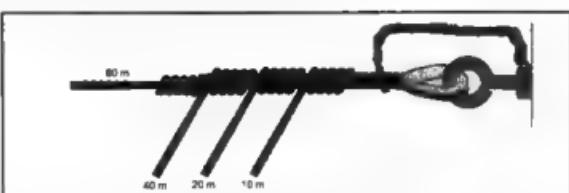


Figure 3 – Details of the wire connection and thimble at the centre insulator. The 80 metre wire is wrapped about 3 inch from the centre insulator, and the shorter wires are wrapped around the double wire in that 3 inch space

the thimble and insulator are oriented properly before you start, with the PL 259 at the bottom as it would be in use. Hold the bottom wires by the insulation, keeping them flat, perpendicular and underneath the end of the 80 metre wrap. The 40 metre wire should be the first and outermost wire, next to the beginning of the 80 metre wrap. Do a flat spiral wrap from each wire around the double wire leading back to the thimble. Snip any surplus and solder. Repeat this for each of the other band wires on one side and then repeat it all on the other side of the centre insulator. Finally, attach and solder the pigtail from the centre insulator to each side.

It is now time for testing. Ensure that the lengths of both antenna sides

# Edison and his contribution to wireless

by Malcolm R Haskard VK5BA

Thomas Alva Edison (1847-1931), was one of the greats in experimental technology. Even though he had only three months of schooling, and had an acute hearing problem, he devised and perfected many items that we take for granted today. In fact he may still hold the record for taking out the largest number of patents by a single individual (over 1,000).

It is therefore not surprising that Edison made a number of contributions towards the field of broadcasting. This would include his efforts in recording sound, in producing motion pictures and in the generation of electric light (the last two items relevant to TV). However in this paper, we will examine his three contributions which have been of importance to wireless. They are the :-

- a) use of a raised antenna
- b) discovery of a phenomena later to be called the Edison effect
- c) invention of the carbon microphone.

## The use of a raised antenna

During the nineteenth century men dreamed of sending electrical signals from one place to another without wires.

For example, Sir Samuel Morse in 1840 sent electrical impulses for a mile or so through water and for several feet through the earth without wires.

In November 1875 Edison claimed to have discovered a "new force" which he later named "etheric force" because it seemed to diffuse itself through the air. There was considerable discussion in engineering and scientific journals of the day on this discovery. Figure 1 shows diagrammatically the equipment used in one of Edison's experiments demonstrating this discovery. On operating what might be called today a buzzer, sparks could be seen in the black box showing the passage of a current and yet there was no return path for the current. Edison and Dr George Beard independently showed that it was due to a very high frequency oscillation.

It was not until 12 years later in 1887



Thomas Alva Edison

when Professor H Hertz proved the existence of electro magnetic waves in free space that the situation became clear and Edison realised that the fundamental principle of aerial telegraphy had been in his grasp. Without reducing the importance of Hertz's work it has been noted that Edison's staff demonstrated the "etheric force" experiment at the Paris Exposition in 1861 and that Hertz used equipment similar to Edison's, especially his dark box with a micrometer adjustment.

Two years before Hertz, Edison with Ezra T Gilliland devised a device to allow someone traveling across the Western Prairies by train to telegraph out and receive messages whilst still in motion. This they called the Space Telegraph or Grasshopper Telegraph. The system was shown to work, patented (May 14th, 1885), but never put to any practical use. A variation of this system allowed Edison to send telegraphic messages without wires a distance of 2 1/2 miles. (His notes actually indicate that as far back as 1880 he had used a similar inductive telegraph system to send messages over 580 feet of free space.) He employed 100 feet high masts

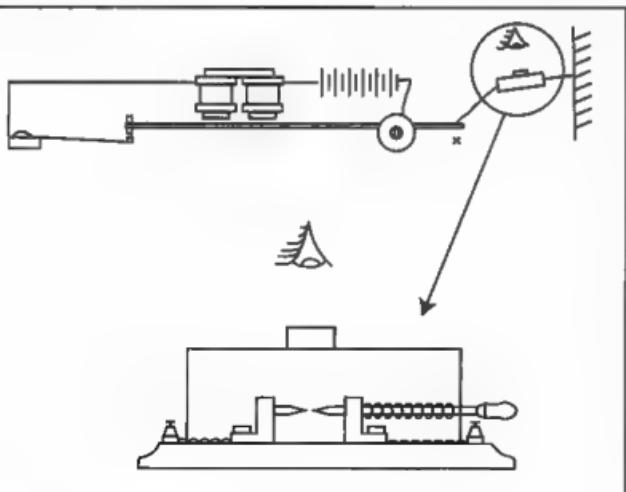


Figure 1

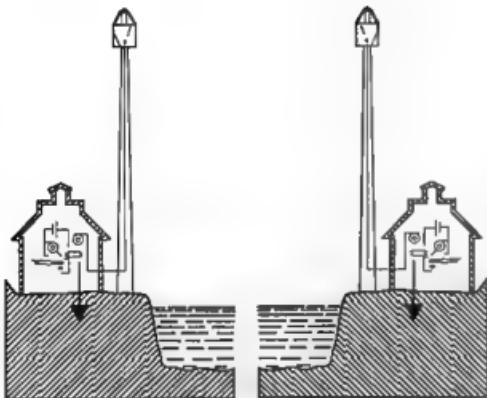


Figure 2

to overcome the curvature of the earth, with a large metallic plate located at the top (Figure 2). The system has been called an electro static generator, the plates on the masts acting as a condenser, the air between the dielectric. Confusion exists today as to whether the system worked or not - the problem lying not on the transmitter side, but in the receiver. It is interesting to note that in May to July 1901, an engineer E Guarini took Edison's system, replacing the telegraph receiver by a coherer and worked distances of 28 miles between Brussels, Mechlin and Antwerp. Comparing the transmitters of Marconi and Edison there was little difference except that Edison used much lower frequencies.

Perhaps the important aspect of Edison's system and patent was the aerial masts. Marconi in 1903, as did several of his opposition experimenters, approached Edison to buy his patent. Edison who had a deep admiration for Marconi, stipulated that the patent was to go to him rather than any of the others and so in 1904 the patent was sold to the Marconi Telegraph Company.

## The Edison effect

Turning now to Edison's second contribution. Whilst studying the physical and chemical reactions which took place in an evacuated glass bulb containing a glowing carbon filament, Edison noticed a blackening of the bulb by a deposit. This he records on February 13th and 18th 1880. Further, he also noted that the bulb in the plane of the filament connected to the positive side was not blackened, leaving a clear patch

as if a shadow had been cast.

Following the matter further, Edison, in July 1882 designed a two element bulb where he inserted a platinum wire between the horseshoe shaped filament. This wire was brought out separately so that the electrical condition of the inside of the bulb could be examined. To his surprise he found a current flowed

when this wire was connected to the positive polarity, but not the negative (Figure 3 (a)). Other shaped electrodes were used giving the same result. This was a discovery of great importance, that a current could flow through a vacuum! In true Edison fashion he immediately set out to apply his discovery and designed an electrical regulator. This he patented on 15th November 1883 (see Figure 3 (b)). The device was not really successful, probably due to difficulties in producing consistent vacuums, and being over-worked with his electric light system he had no time to follow things through. However, his device was the first electronic instrument - a voltage regulator and he exhibited it at the International Electrical Exposition in Philadelphia in September 1884. The British engineer, Sir William H Preece saw the display and out of curiosity took back to England several models. In 1885 he presented a paper to the Royal Society calling the phenomena discovered by Edison the "Edison Effect".

Professor Ambrose Flemming in London (it appears Edison may have asked his help at this time), tried to improve Edison's two element bulb so that it could reliably be used as a regulator. In 1888 he replaced the metal plate electrode with a cylinder surrounding the filament. It worked far better as a rectifier, but again it appears problems in achieving a consistent vacuum limited its use as a regulator and Flemming gave up.

Marconi, in the years 1895-6, when experimenting with his primitive wireless

used the coherer of Edouard Branly to detect his signals. The discovery of the electron and work of Sir J J Thompson in 1897 gave Flemming, who was now a consultant to Marconi, the idea of using Edison's device or the Flemming valve as he himself called it, as a detector. It proved to be a far more sensitive and reliable detector than the coherer and so after 1904 the Marconi Telegraph Company standardised on this detector, obtaining a greatly increased range of communication.

In just 20 years Edison's two electrode bulb had come into its own and until the advent of the transistor in 1948 was the basic element in all electronic communications.

## The carbon microphone

Edison's third major contribution to wireless, the carbon microphone, was really developed for the telephone industry. In June 1875, Alexander Graham Bell first heard the feeble voice of his assistant from his telephone. He patented it and made it public in March 1876. At this time, Edison re-examined a similar device that he had made (in fact he had lodged a note of intent to patent on 14th January 1876), and found that it was capable of transmitting sound, though crudely. If only he had had good hearing he would have heard the faint sound as Bell did. (To "hear", Edison used to bite the instrument with his teeth allowing the vibrations to be conducted through the bones of his head to the inner hearing nerve).

Bell's magneto telephone, constructed around transducers similar to today's dynamic microphone and earphone, had no amplification and so was limited in the distance that it could be used to about two miles. Edison, who had been approached by Western Union to devise an alternative telephone, looked at ways in which the telephone volume could be raised. On 20th January 1877 he succeeded using platinum points into carbon granules. From here he produced the carbon microphone and by including a step up transformer found that he was able to increase the volume still further. A patent was filed on April 27th 1877. In March 1878 using the Edison transmitter with a Bell receiver a conversation over a distance of 107 miles was demonstrated to the Western Union directors. All were impressed with the loudness of the signal.

With the advent of wireless telephony, it was quickly discovered that the carbon microphone was ideally suited for modulating a valve oscillator. Even with the development of more exotic electronics the carbon microphone stayed and it was not until the 1950s that this type of microphone was finally superseded in communication systems.

## Conclusions

While Edison will always be remembered for his inventions of the phonograph and electric light bulb, his contributions made to wireless are no less significant.

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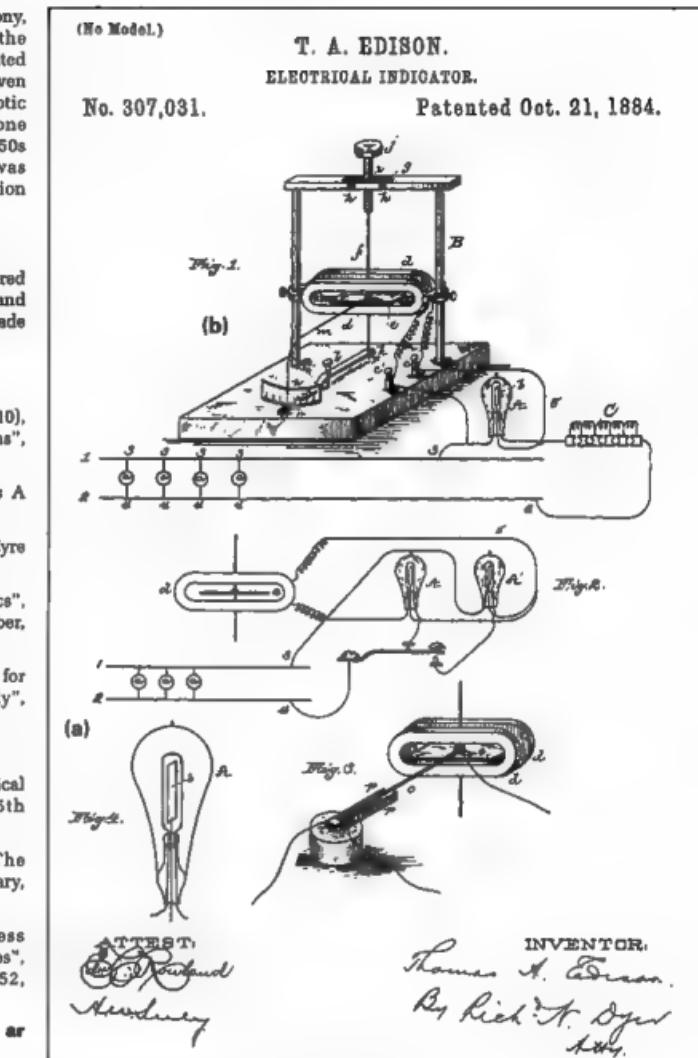


Figure 3

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## Technical Abstracts

Peter Gibson VK3AZL

## YS1AG 40 metre two element beam

Very few of us are able to erect full size beam antennas for the lower frequencies. Some designs for reducing the size of an antenna use loading coils. Other designs achieve a reduced turning circle by folding the ends of the elements.

Peter Dodds, G3LDO reports in his Antenna column in RadComm for January 2004 on one approach to making a compact, two element 40 metre parasitic beam.

Andy Goens, YS1AG/G5AVU has achieved a small element size by folding the ends of the elements back on themselves, as shown in Figure 4. The turning circle is about one third that of a full size 40 metre beam. Its measured performance on the air is claimed to be 2-3 S units above another local operator using a vertical. The front to back ratio is about 12dB. It is not the ultimate antenna, but it is better than a dipole and quite compact.

Analysis of the antenna using EZNEC3 indicates a maximum free space gain of just over 4 dBi and a front to back of about 10 dB, which agrees with the measured performance. Increasing the

boom length from 0.078 wavelength to 0.1 wavelength results in an increase in gain to 5 dBi and front to back ratio of about 12 dBi. This would increase the boom length from 3.3 m to 4.26 m.

As the feed impedance of such an antenna will be quite low, the feed arrangement consists of a gamma match where the gamma rod is 1.3 m long, made of 5 to 8 mm OD tubing and spaced 180 mm from the driven element. The series compensating capacitor comprises two tubes, one sliding inside the other to make up a variable capacitor with a maximum value of 180 pF. A 100 pF doorknob capacitor is connected in parallel to make up the required total capacitance. The measured VSWR, using such an arrangement with 50 ohm feeder, is 1.8:1 at 7.0 MHz, less than 1.2:1 over the range of 7.04 to 7.1 MHz, rising to 1.8:1 at 7.2 MHz.

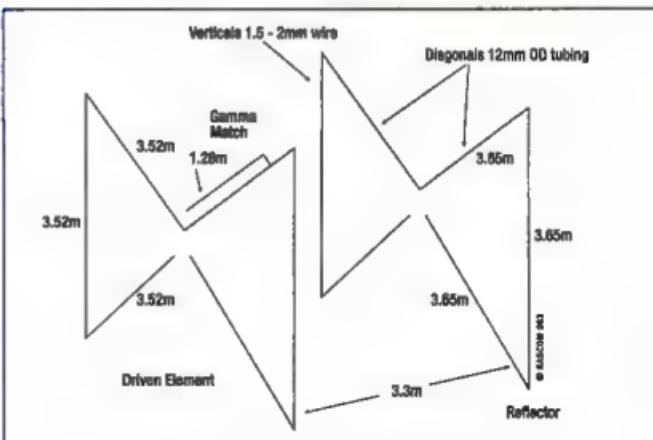


Figure 4 – YS1AG 40 m minibeam

The original article describes two methods for making the centre supports for the antenna. On the basis that most people will not be able to weld aluminium we will proceed to the second method. Take two lengths of 1 metre angle stock of suitable size. Drill two holes about the centre of the angle to take a U-clamp of suitable size to fit the boom. Two lengths of the angle material are clamped to one end of the boom to form a 60/120 degree spider. Repeat the same for the other end of the boom. When the angle sections are correctly aligned, the tubular diagonals are clamped to the angle material with hose clamps. The high voltage (open or lower) end of the elements can be supported using hardwood dowelling, which is fixed to the angle material. The wire forming the vertical elements can be fixed to the ends of the 12 mm elements using hose clamps.

The antenna can then be erected to a convenient height for tune up, which in this case, consists of adjusting the Gamma capacitor for minimum VSWR at the desired frequency

*more Technical Abstracts on page 26*

## Robert (Bob) Wheeler

### 1917 to 2004 (Previously VK5NH)

I first met Bob in 1956 at the tender age of 14 years. I had left school and applied for a job at his radio repair shop (Wheeler's Radio Service) in Hutt Street on the rim of the City of Adelaide. Having previously developed an interest in radio, Bob employed me and so I spent an interesting year in his workshop doing the easier repair jobs. Bob was a keen sailor and, being then the distributor of "Vaughn" transceivers, equipped many a vessel with radio communications. He also was at the cutting edge of television when it was established in Adelaide. Being young and not very smart, I left his employ and after a few dead-end jobs joined the Army, and ended up in the Signal Corps and trained as a wireless operator.

Some 30 odd years later I bumped into him at a local electronics store and began a fruitful friendship, Bob encouraging me

to obtain my "Ham" licence. His advice and assistance to me was invaluable. His three element quad and telescopic mast was to be admired at his residence in Modbury its performance being amazing. His two metre phased Yagi array guaranteed daily skips with an operator on Hindmarsh Island. A few years ago with failing health Bob ceased his "Ham" activities and so I became the recipient of his mast and quad. I remember the day I, with a taxi truck, went to his place to pick up the already dismantled mast and quad; but it just happened to be that day that his water heater blew up, so when I handed him payment for the mast and antenna he handed it straight on to the repairman. It became our habit to say to people who wondered where his mast etc had gone that it turned into a water heater.

Bob is survived by his widow, Mons, son Noel and daughter-in-law Ashly.

Submitted by Godfrey Williams VK5BGW

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# A visit to the Cardwell Bush Telegraph Heritage Centre

by Felix Scerri VK4FUQ

Recently, while on one of my routine trips to Cardwell where I conduct regular VHF path tests with amateurs further north on the Atherton Tablelands, I decided to visit the newly opened Cardwell Bush Telegraph Heritage Centre situated at 53 Victoria Street, in the main street of Cardwell. Actually the main street is the highway called "Bruce". As a person with a long background in telecommunications, (I worked for Telstra from 1981 to 2000 in the technical area), I was looking forward to seeing the various displays at the Centre. The whole Centre has been open since early in 2003. There are several buildings on the site, being the old post office, the old courthouse and another most interesting "building". There are lots of interesting displays throughout and reminders of the good?/but hard old days.

I was met at the entrance by the charming and vivacious Renne who is the Museum Coordinator paid by the Cardwell Shire Council and also one of several volunteers at the Centre and she showed me around the various buildings and provided enlightening commentary. By the way, entry is free. The old post office building was in use from 1870 to 1983, and as such, has seen quite a lot of local history. It is interesting to note that the township of Cardwell, now a quaint, quiet town by the sea, was in earlier days an important Centre providing vital commercial infrastructure for the local and not so local area. The various displays feature quite comprehensive collections of the various equipment seen throughout the time of the post

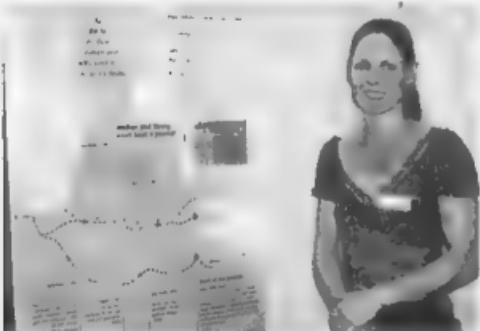
office's existence, including telephone equipment. Some of this I was quite familiar with, but some was just a little before my time, such as early operator as-

sisted manual switchboards, magneto telephones and other allied telephone equipment from the days before modern automatic telephone exchanges such as we have today. I guess there was plenty of social interaction and gossip on the party lines of the day! There were also some nice displays of actual hand keys sourced from telegraph stations around



Selection of telegraph keys

the area. Also to be seen were constant reminders of the overhead open wire aerial lines that carried the few telephone and telegraph trunk circuits that existed at the time, in the form of beautifully made glass and porcelain insulators. They were a very common sight on telephone poles! Apparently as related to me by Renne, the breakage



Renne the Museum Coordinator



The Museum Building

of insulators was quite common for the lead contained in the insulators.

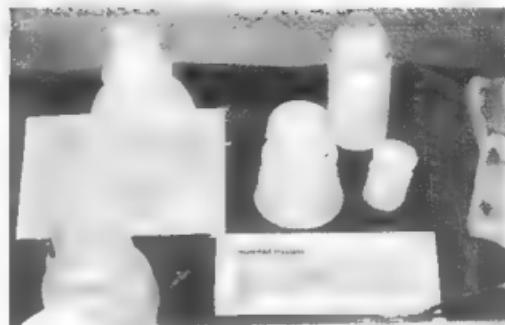
Of particular interest to me, in different rooms of the post office building, was a setup of telegraph keys and tone oscillators, allowing visitors to send "Morse code" to each other for a bit of fun. In my conversation with Renne, I mentioned my hobby of Ham Radio and my interest in "Morse code". Inevitably I guess, I eventually found myself seated at one of the keys, sending a little text in Morse code and explaining a little about Morse code and its use in Ham Radio. I also mentioned its sad (to me anyway) decline in Ham Radio, at least as a requirement for licensing, and its decline in areas such as shipping communications systems. Incidentally, the hand keys used in this display were quite modern "hi mound" keys.

One of the other buildings on the reserve, associated with the courthouse is the "lock up". It is not a building I would like to end up in, being a fairly cramped and very solid small wooden room with enough space for a bed of sorts (it didn't look very comfortable to me!) and a grating for a window that let in a mere glimmer of sunlight. A very solid looking wooden door complete with a large barrel type lock, obviously designed to prevent escape, completed the structure. I was reminded of that famous scene in the "Great Escape" of the Steve McQueen character in solitary confinement! As one would expect, Renne told me that apparently there were no successful escapes from this lock up. Things were tough in those days with definitely no luxuries, for those who transgressed the law! But life was tough for all. Throughout all the displays, evidence of this is

everywhere. The old time laundry, complete with wash board, is but one example.

All up, I found the Centre quite fascinating. I think, as a general rule, it is important to remember things of the past and just how lucky we are today. I found it particularly interesting

to reflect on the evolution and development of telecommunications over the years, from the simple telegraph key and basic open wire aerial feeders and single wire earth return systems to early telephony to modern digital switching and the present state of the art digital telecommunications. The next time



Porcelain insulators from the telephone lines

you're in Cardwell, drop by and have a look. The Centre is not open every day. It is advisable to ring the Cardwell Shire Council on 07 4043 9100 for opening times.

Highly recommended.

73 Felix VK4FUQ.

ar



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# Technical Abstracts

Peter Gibson VK3AZL

## An easy to build, dual-band collinear antenna

Get some gain on 2 metre and 70 centimetre, without a beam. In QST for September 2003, Dan Friedrichs, K0IPG shows how to build an inexpensive Collinear for the amateur bands.

### Bill of materials

This antenna was designed to be simple and inexpensive to build. All you need is the following components:

- 10 foot length of  $\frac{1}{4}$  inch PVC pipe
- $\frac{3}{4}$  inch PVC end cap for top of PVC tube.
- $\frac{1}{4}$  inch wood dowel,  $1\frac{1}{4}$  inches long.
- 4 feet of 20 SWG solid, insulated copper wire
- 7 feet of 12 SWG solid, insulated copper wire
- 20 inches of 300 ohm twin-lead (not foam type)
- small piece of copper-clad printed circuit board material

### Building the matching section

The matching section is shown in Figure 5. This will require the 20 inches of twin lead and whatever coaxial cable you intend to use (RG-58 would fit into the tube). Remove  $\frac{1}{2}$  inch of insulation from the bottom of the twin lead. Twist the two wires together and solder. From this point, measure up  $1\frac{1}{4}$  inches and mark the spot. Strip off  $1/8$  inch of insulation above this point, taking care not to damage the conductors.

Strip about 1 inch of insulation off one end of the coaxial cable to be used and separate the braid and centre conductor. The coax may be of any suitable length and be terminated as needed at the other

end. Solder both parts of the coax cable as shown in Figure 5.

Measure up  $16\frac{11}{16}$  inches from the bottom of the twin-lead and cut off any excess. Finally, at the top of the twin-lead, remove  $\frac{1}{4}$  inch of insulation from the same side of the twin-lead that is connected to the centre conductor of the coax cable. The matching section is now complete.

### The radiating element

The layout of the radiating section is shown in Figure 6. Start by cutting two pieces of the 12 SWG wire to  $38\frac{1}{2}$  inches long. These will form the top and bottom of the radiating elements.

For the coil, take the section of  $\frac{1}{4}$  inch dowel and the 20 SWG wire. Drill two  $1/8$  inch holes in the dowel,  $1\frac{1}{8}$  inch apart. Insert one end of the wire through one of the holes with about 1 inch sticking out. Wind 13 turns tightly

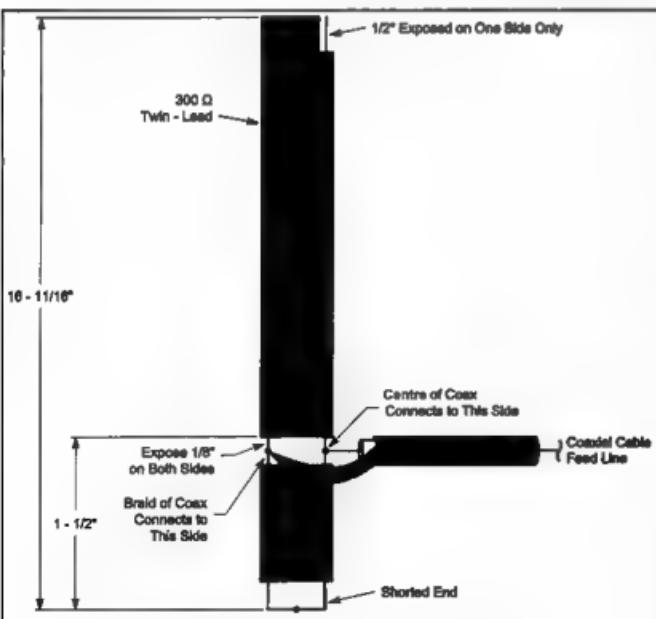


Figure 5 – The matching section for the dual-band collinear

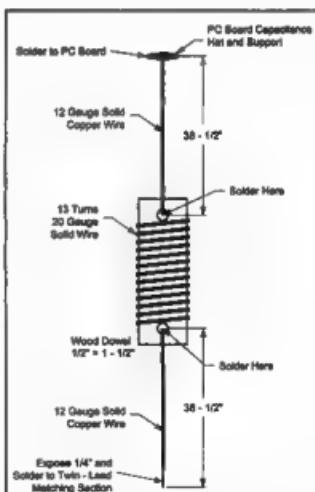


Figure 6 – The collinear radiating element and decoupling choke.

## Charles (Chuck) Farkas VK6CF

Chuck who was born in NJ, USA died February 10th 2004 at his home in Kalamunda, Western Australia aged 84.5 yrs.

His love and interest in amateur radio began with building crystal sets at an early age and continued until two days before his death. His tower is a landmark in the Kalamunda area being some 100ft high.

He obtained his first licence W2IMX in the 1930s, and his present callsign VK6CF soon after the end of WW2 having been introduced to his first WIA meeting in January 1946 by VK6GM.

Chuck joined the USN in June 1939 and entered active service in the USNAF in March 1941. He was a Pearl Harbor survivor, serving in the Asiatic Pacific area as a radioman/gunner in the Catalinas in Patrol Squadron 22, Patwing 10, Patrol Squadron 101, and Scouting Squadron 61. From 1942 until 1944 he was based at Crawley Bay (Catalinas) in Western Australia and after the war returned to Australia to live.

Chuck, being a retired electrician, designed and built his own service lift that went up and down the full height of his tower. He was also the only person

in Western Australia to fly a home made 20 m, 5 element yagi that was supported by a one wave length boom.

Chuck also was a WIA VK6 Division member dating from back around 1946.

He was very well liked all over the bands, both local and international. We will miss Chuck.

He is survived by his wife of 58 yrs Dorothy, daughter Carolyn, son-in-law David and grandchildren Melinda and Paul.

(Dorothy Farkas has given permission for the above).

Mal Johnson VK8LC

## Arthur Johnson VK4PX

Arthur Johnson went silent key March 2004 aged 88 years. All those who knew him will mourn his passing.

Arthur was born August 1916. By 1936 he was busy working as a salesman for Music Masters, a Brisbane company that manufactured and sold these new radio things. The new radio things bug struck Arthur and he obtained his amateur radio licence on 28th February 1938. Not too many years later his radio training found him a place in the Australian army as a signaller.

Posted to Milne Bay, Arthur soon

demonstrated what friends referred to as interest and enthusiasm. He discovered that army radio works just as well as amateur radio and soon had his own net operating for friends in Australia. The army took a very dim view of this and Arthur found himself back in Australia teaching Morse codes to new recruits.

Post-war, Arthur found employment with the P.M.G. in Alice St Brisbane. At that time the building was shared by the P.M.G. and A.B.C. radio. No one knows how but Arthur was soon seconded to the A.B.C.

In 1960 he moved with the A.B.C. to the new T.V. studios in Coronation Drive and worked in studio 41 till his retirement in 1976.

On retirement Arthur and wife Coral moved to the Sunshine Coast, living in a caravan for two years while they built a house in Kawana. Arthur was an active member of the Sunshine Coast Amateur Radio club, a supporter and volunteer for Meals On Wheels and a man who would go out of his way to help when help was needed.

Arthur is survived by his daughter who lives in Scotland.

David Eyles

10 Coolibah St, Moolimba Qld 4564

## Technical Abstracts continued

onto the dowel and insert the other end through the hole at the other end, leaving about 1 inch free. Bend the wire at 90 degrees at both ends to stop the coil unwinding. Strip the insulation off both wire ends. Now strip about  $\frac{1}{4}$  inch off the end of each of the 12 SWG radiators (top and bottom). Wrap and solder each of the coil ends to the top and bottom of the 12 SWG radiators.

## Connecting it all together

Remove  $\frac{1}{4}$  inch of insulation from the bottom of the bottom 12 SWG radiator. Solder it to the exposed  $\frac{1}{4}$  inch section of the twin lead matching section.

Cut a circle of the circuit board material, slightly larger than the inside diameter of the PVC pipe, but smaller

than the outside diameter. Drill a hole in the centre of the disc and solder the top of the top radiator.

Insert the entire assembly into the PVC tube from the top, (twin lead first) so that it is supported by the circular PC section.

If it is necessary to tune the antenna to frequency, the  $3\frac{1}{4}$  inch sections may need to be trimmed up or down. Be sure to adjust both equally. It may also be necessary to adjust the matching by moving the position of the coax up or down on the matching section.

If all is well and you are happy with the performance of the antenna, the top cap can be glued on and the bottom of the pipe can be filled with sealant to make it fully waterproof. The antenna is now completed.

## This month

### Remembrance Day Contest

August 14th and 15th

### International Lighthouse activation

August 21st and 22nd

### ALARA Contest

August 28th and 29th

# PNG amateurs remember at the Kokoda gateway

P29KFS, Rick Warneet

## RD 2003 Contest station P29AIF, Papua New Guinea

Amateurs in PNG have long wanted to provide a station for the RD Contest that offered a closer link to the past history that makes Remembrance Day important.

For the last five years, it has been a personal aim of the author to establish and operate a field station from either the start of the Kokoda Trail or the Bouma War Cemetery.

Unfortunately, this has not been the simple task it sounds, there being many factors that prevented a station from being organized, manned and operated.

At last, with the help of some amateurs just new to the PNG AR scene, sufficient interest was generated and equipment put together to make it all happen on at least one day of the weekend.

Previously, individual stations have operated from PNG and have managed to do quite well in the overall contest, giving out more than 300 contacts in 2002. However, this did not meet the special station rating that could be expected from PNG, a place where activity during the last war was high and



of great importance to Australia. More effort was needed to put to air a station closer to the places where Australian soldiers fought and died preventing an invading army from reaching a position where they could strike directly at our Australian shores.

Activity was hoped for from the Kokoda Trail, Owners Corner or even part way along the track itself.

A real field station out in the bush was hoped for, but several aspects of operation stopped this from becoming a reality in the 1990s. Security problems, work commitments and the number of

people available to operate the station were all against such a station being created.

An upgrade to the War Cemetery security, fencing and the appointment of a permanent guard service for the protection of the area made operation from the location possible this year.

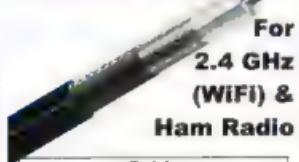
In late 2002 it started to look as though the station could be established and used to provide many interested people with a contact. Efforts were re-doubled to make it happen.

In 2003 plans firmed and a small group was formed to push for the collection of equipment, building of aerials and scheduling of operators.

Simple aerials were the order, it being necessary that they be erected and taken

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#### Connectors

N-Type	\$7.00 (\$3.00")	\$7.00 (\$4.00")
RPBMA or	\$10.00 (\$5.00")	n/a
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\* = bulk price

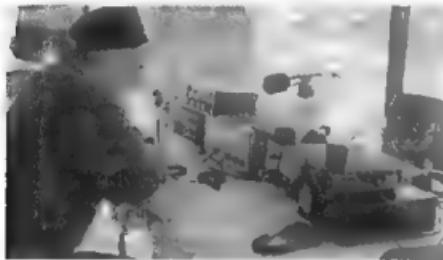
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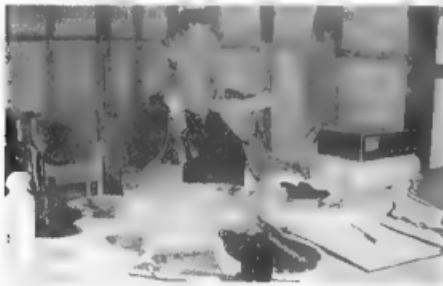
down in a short time to maximize operating time. Dipoles with baluns were made and tested prior to their use at the site. A planned long wire was never used because of the difficulty in climbing the only coconut tree in the right location.

The station was to operate from mains power, very conveniently provided in the small building we were given access to. Battery backup was also available in case the supply authority performed as expected and "pulled the plug" at a critical time. On the day, the mains power never faltered.

As it turned out, three radios were



Operators enjoying the hospitality of station P29AIF



available on the day, we managed to erect aerials for 40, 20 and 15 and some 100+ QSOs were made.

Six amateur operators and several other interested people attended the site from about 0800 and operated through the day until 1600. Most contacts were made on 20 m SSB.

One visitor was an organizer of Kokoda Trail Trekking and some of his soon to be trekkers were also on site. He gave some first hand accounts of the trail as it is now and advised that the correct history of many battlefield sites is still being discovered.

His group takes people over the trail in some 10 days, time he says, to see what it was all about. You need time to look into the historic places, get a feel for the terrain and the jungle and develop some appreciation of just how hard it was to do anything and move about.

I recall walking up the Golden Staircase on a hike from Port Moresby, remembering that then it was actually a river of mud two feet deep and that men were carrying 70 pound packs loaded with ammo and rations one way and their wounded mates back the other way.

A BBQ lunch was put on by Gary P29NW and it was enjoyed by all present.

Operations continued through the early afternoon and contacts tapered off after about 14.00 local time (04.00 UTC).

Later in the day, a visiting amateur operator for a period using CW and gave contacts to some of the many who hoped to hear P29AIF on code.

Vladimir had just returned from a flying trip around PNG, during which he carried a radio and delta loop aerial tuned for 40 m and above.

He had managed to visit Rabaul, Manus, Madang, Karkar Island, Ukarumpa, Goroka, Mount Hagen and was now back in Port Moresby after 8,000 QSOs mainly on CW.

As the afternoon passed and contact rates fell, it was decided to drop most of the aerials and continue only on 15 m.

A few last QSOs were made and it was then time to pack up and head for home.

By the time we were ready to go the contest was drawing to a close and we left hoping we had provided some highlights for those that



P29NW Gary cooks lunch

have a special link to Bomana, Kokoda and PNG.

Support, operation and technical assistance was provided by :

P29NW, Gary  
P29GQ, David  
P29ZTC, Terry  
P29VVB, Vladimir

Peter, John, Greg, Geoff and others.  
Radios used on the day were an ICOM 7400 and 708Mk2 and Kenwood TS-690.

Aerials - dipoles at about 10 m for 40 m, 20 m and 15 m all fed with coax via baluns.

It's hoped we can manage to do it all again next year, perhaps we will even manage to operate overnight for the Saturday.

Best 73, P29KFS Rick

(more pictures inside back cover)



P29NW Gary, P29GQ David, P29ZTC Terry,  
P29VVB Vladimir

## VK1 news

### Forward Bias

**Being in the middle of an earthquake, strength 6.8 on the Richter scale, and with only a Hand-Held to communicate with, is not much fun, especially when you are in a foreign country.**

But this is exactly what happened to Michael Walkington, VK1CK, who, as a member of the RAAF, spent 4 years in Seattle, Washington, USA, ensuring that Boeing converted six regular production models 737 into the 'Wedgetail' Radar platforms in accordance with Australian specifications. Mike's technical background and experience as a licensed radio amateur came to the fore when he carried out checks on performance specifications of communication systems and simulators in these aircraft.

Mike said that the four years in the USA were a wonderful experience for him and his family. Using a laptop-driven projection apparatus, he showed still pictures and a slow-motion movie of how Boeing put the 737 aircraft together, and then proceeded by dismantling the aft section of it and replacing that with a fully functional Radar system including a flattened torpedo-shaped radome (Radar Dome). One day, an earthquake struck the area around Seattle. Mike decided to get out of the building he was in and drive home to look after his family, as telephone and mobile services had dropped out. It appeared that other people had the same idea at the same time and, as a consequence, all the

roads leading to Seattle were blocked with traffic. It took Mike four hours to drive a distance of 40 km. Mike said that during disasters such as earthquakes, floodings, fire storms, or tornadoes, you don't want to be stuck in traffic with nowhere to go. His only means of communications at the time was his Hand-Held with which he logged in at the Seattle based amateur radio club. Mike said that precisely at times like that amateur radio clubs around the USA spring into action to pass messages and provide emergency communications to individuals and other service-based organisations. Luckily for the manager of the Boeing assembly plant, he was able to talk to his staff from Seattle using the facilities of the "Boeing Employees Amateur Radio Society" aka BEARS. Mike said that BEARS does things a little different from the Canberra Region Amateur Radio Club. At the start of each monthly meeting, a pledge of allegiance is made. After that, the agenda comprises business items, reports from members with special responsibilities such as Propagation, Packet, HF, Beacon reports, Repeaters, etc. A guest speaker then follows this. Near the end of meetings, a lucky door prize is handed

out, doughnuts and coffee are served, and the junk box with donated items such as components or discarded radio projects is made available to members for free.

But, before Mike made his delivery on Monday, June 28, 2004, our President, Alan Hawes, VK1WX, dealt with three important items of business: The new name of the Division was first. Alan proposed, and it was agreed, that the new name of the Division will be "Canberra Region Amateur Radio Club" (CRARC). The second agenda item was setting the membership fee. Again, Alan proposed, and it was agreed, that the membership fee of CRARC would be \$20.00 per year, payable on July 1 of each year. The last item of business was the signing of the draft agreement with the WIA. This was merely an announcement to the effect that the members of the Division's executive committee intend to sign the agreement. This agreement formalises the break between the WIA and the ACT Division.

The next General Meeting, together with a Trash & Treasure sale, will be held on Monday, August 23, at 8.00 pm at the Scout Hall, Longerenong St. Farrer. Cheers.

## VK2 news

Tim Miller VK2ZTM

**Hello there. Everyone is aware that this is a major turning point for the Institute as the various Divisions look at the ways of making changes from separate State bodies to one single structure.**

It is 94 years since the Wireless Institute was formed in New South Wales, in March 1910. It is 49 years since the serious work began to develop the "Home for VK2WI" at the Dural site. It is 84 years since the committee of the day recorded an interest in seeking property to house the Institute. This was realized in 1959 when a property was obtained at St Leonards. That was sold in 1982 when the present Parramatta property was purchased.

The assets of the NSW Division is giving the NSW Council much to ponder at this time.

In late June, members of the NSW Division were sent a letter by the Membership Secretary, Terry VK2KDK, outlining the positions and options of future membership. The Council has extended the membership of NSW members subject to renewal in July, August or September, to 30th September 2004. By then, it is expected that the

direction being taken will have been determined. The options available to NSW members are:- [a] to join only the national body; [b] join only the NSW Division or [c] join both bodies. Each body will attract a fee and while not finally determined as these notes were being written, it could be round \$10 for the NSW portion. The national fees have been announced elsewhere. Some members were confused as to the total value of membership of both bodies. It

would in fact be the sum of both fees being asked. Thank you to all who returned the form. If you have not yet returned the form, Terry VK2KDK would be pleased to hear from you.

The ninth position on the NSW Council was filled at the June Council meeting by the co-option of Chris Devery VK2XCD. Chris comes from Goulburn. Consideration is being given to holding the deferred Conference of Clubs in September, most likely Saturday the 11th. The August Council meeting is scheduled for Friday the 13th. For much of the year a Novice class has been conducted at Parramatta by Terry VK2UX. With the opportunity at intervals to sit an examination, most of the class did so and were successful. Most are now on air. The July Council meeting discussed reports and actions pertaining to the changeover of the Institute structure, along with the routine department reports from the various Councillors. Council meetings

in recent times have been held on Friday afternoons. With the finish timed for late afternoon, it enables the country Councillors to return home the same day.

The packet group AAPRA, closed down their operations last year, following a decline in interest in this mode. They recently dispersed their remaining funds and included the NSW Division in the distribution. The donation will be put towards the continued operation of the Packet facility at Dural. Thank you AAPRA.

The proposed workshop - reported in last month's notes - to construct a 70 cm Yagi antenna was deferred from the July gathering to a later date. The morse facility at Dural was restored late June after surgery was performed on the computer. It should last a little longer. The VK2RSY beacons on both 2 and 70 remain off air waiting for a kind soul to assist in the rebuild of same. An interim

beacon source on 2 metre is the morse transmission on 145.65 MHz, an FM signal with about 20 watt to a vertical antenna.

The Bookshop reports an interesting fact about morse. Now that it is no longer a subject for examination, there has been a big increase in inquiries for the Morse Code Kit as well as for morse cassettes. There is currently a good stock of both. Keeping up with demand in the Bookshop has the office busy. No sooner is stock in the door, it is out again, filling a back order. Check out the web site for the latest titles. With the continuing demand, please note that there may be a few weeks delay on some titles. Do you have an interest in 'fox hunting'? A recent arrival in the Bookshop was a CD on the art of same. It could be worth the viewing if it gives you the edge over the other competitors - providing they don't get to see it also.

73 - Tim VK2ZTM.

## VK6 news

Compiled by Will McGhie VK6UU

Input to: will2@iinet.net.au

08 9291 7165

### Lots of meetings

As reported over the past few months, the move from the old WIA Federal structure to the New WIA National structure is taking up large amounts of the VK6 Council's time. Many people have provided considerable input as to how such a change may take place in VK6, but one person who has brought much of it together deserves a special

mention and that is Wally Howse VK6KZ. Many thanks to all on the VK6 Council including ex-officios and co-opted, who have debated the pros and cons and dealing with what has been a fair bit more involved than at first thought.

At time of writing, a Special General Meeting is planned for mid/late August. A Motion was passed by the VK6

Council to the effect that membership subscriptions (for the VK6 Division) be \$0.00 (zero) for the year 2004/2005 for financial members at June 30th 2004. This extension of VK6 membership is for the purpose of having financial members to be legally able to vote at the Special General Meeting /Ballot. Note: This does not include AR magazine or any other service now provided by the National WIA, so continue your membership with the WIA by joining the National body.

This is a historic time for the WIA, so the VK6 Council asks you all to make the effort to attend the meeting but if you can't attend in person, please send your vote to the questions asked by post or by giving your proxy to a member who is attending the meeting in person. Details on the VK6 news and the VK6 web site. <http://members.iinet.net.au/~vk6wia/>

The accompanying photograph shows the VK6 Council and visitor at a typical meeting at CWA House West Perth



VK6 Council

# State news

## VK6 News continued

### Meteor trail reflections

Several amateurs in VK6 have been experimenting with the digital mode WSJT mode JT6M. Don VK6HK, Wal VK6KZ and Cec VK6AO come to mind. Cec tows a caravan every year from Perth to Broome (long way) and amateur radio goes along as well. Don supplied the following information.

Meteor scatter tests with Cec VK6AO portable in Broome have been a bit limited so far but we plan to do more

before he returns to Perth around the end of September. So far we have trialed WSJT mode JT6M on 50.230 MHz with some success. Usually it can be expected that QSOs like this can take more than an hour to complete if things aren't optimum and so far we have only been able to allocate half an hour per session. Therefore, we have been using the opportunity to get some practice with the mode rather than seeking to make lists of fully complete contacts with

each other! Not unexpectedly, there have been some spectacular "burns" from meteor trail reflections. On one occasion for longer than 30 second over the 1600 km path. We have yet to try 144 MHz although that will be more difficult given greater path attenuation and lower power available at Cec's end.

14 MHz has come in handy for liaison and we have been keeping regular skeds there, although not always conducting WSJT tests on VHF.

# VK7 news

Justin Giles-Clerk, VK7TW

Email: vk7tw@wls.org.au

Advisory Committee Web Site: [www.wls.org.au/vk7](http://www.wls.org.au/vk7)

## Branch Meetings

### Northern Branch Meetings

June 9 saw a record number of attendees at the Northern Branch meeting to hear Rex Moncur, VK7MO speak about the digital modes he is currently experimenting with and about his recent DXpedition across the Nullabor Plain to Perth.

The night moved into a practical group discussion on the construction of Rex's antennas for 144 & 432 MHz. The Northern Branch has also formed an IRLP working liaison committee to work with Tony, VK7AX.

### Southern News

#### APRS now operating

Ken, VK7KRJ, let me know that the APRS digipeater is now operating on Guy Fawkes Hill. The digi is on 145.175 MHz FM which is the national APRS frequency. There are a growing number of mobile stations operating APRS in Southern Tasmania.

#### IRLP - Canadian School Contact

Ken, VK7DY, let me know that on 24 June, repeater 2 and IRLP was used in a QSO with Brian, VE6BJ in Calgary Canada and the Chestermere Lake Middle School. The class did a project on Tasmania and Australia and were asked to answer a number of questions

finishing up with "What is black and white, has a very nasty growl, sleeps all day and stays up all night, and lives in Tasmania?". At the completion of the QSO we were treated with the "Yeah for the day" from all the kids.

#### Repeater Updates

The new repeater relay system on 146.850 MHz is now operational. The system uses a commercial scanning receiver supplied by Brian, VK7BW. It continuously scans the output of three 70 cm repeaters, VK7RBH, Launceston, VK7RIN, Barren Tier and VK7RTC, Mt Nelson (as well as the 6 m repeater) and relays their output on 146.850 MHz. VK7RAF is now up and running again courtesy of Brian, VK7RR and Clayton, VK7ZCR informs me that there is now a simplex frequency of 439.300 MHz that is linked to the Echolink repeater VK7RBW on 147.850 MHz. This overcomes the issue for some of the older rigs with the 1.8 MHz offset on VK7RBW.

#### Southern Meetings

June 16, we were treated to a very interesting talk from visitor, Peter Parker, VK3YE who was touring the state with Mum, Lesley. Peter's talk was on his latest experiments with a 1.8-21 MHz

magnetic loop antenna made from 19 mm soft copper pipe. Thanks for coming along Peter and sharing some of your vast knowledge.

June 23 saw a very interesting "hands-on" demonstration of the



Richard VK7RO talks about his experiences with PIC Microcontrollers.



(L to R) Stu VK7NXX, Nick VK7HAF and Phil Grundy - host of the Bruny Island VHF repeater linked by UHF to the Mt Nelson VHF repeater. Photo courtesy of Roger, VK7XRN.

use of oscilloscopes by Eric, VK7TAS. Eric followed this with a demonstration of his home brew Time Domain Reflectometer. We then had a demonstration of spectral analysis fast fourier transform software demonstrating the frequency domain. Thanks to Eric for an excellent demonstration.

June 30 we were asked whether tube-type rigs still have a place in amateur radio and I think after the broad ranging discussion we had the answer was a resounding YES!

We took a look at the FT101 and TS520 series transceivers.

July 7 the Branch was treated to a night of microcontroller madness with Richard, VK7RO who demonstrated a number of PIC projects and yours truly demonstrating a number of Z8 projects.

Thanks Richard for sharing your knowledge.

### WICEN News - Subaru Safari

Roger, VK7XRN has let me know that WICEN South's contribution to this year's Subaru Tasmanian Safari brought multiple thanks from the organisers, commenting on WICEN's reliability and professionalism over many years.

Over two thousand messages were passed by WICEN, between eighteen locations, over the two days. Over 30 radios, excluding backups, were used. 3 VHF repeaters with 2 UHF links were deployed, connecting locations bounded by Dover, the Tahune Air Walk, South Bruny Island and Hobart.

The WICEN team can be justifiably proud of their achievement. A special tribute to those who designed, built or deployed equipment, participated in surveys, supplied additional equipment or put in an extra day for set up.

## VK3 news

By Jim Linton VK3PC

WIA Victoria web site: [www.wiavict.org.au](http://www.wiavict.org.au)  
email: [wiavict@wiavict.org.au](mailto:wiavict@wiavict.org.au)

### WIA restructure adopted in Victoria

WIA Victoria has become the first WIA Division to complete all of the necessary procedures required of it under the restructure of the WIA after receiving the strong endorsement of its membership.

The signing of the implementation agreement between WIA Victoria and the new WIA National occurred on Wednesday, 21 July, immediately after a well-attended membership consultation meeting.

The outcome of months of work is a very simple implementation agreement that underpins the arrangements between WIA National and WIA Victoria.

The approach taken was to carefully consider the WIA restructure including the seeking of legal advice, numerous meetings of the WIA Victoria Council and its sub-committee engaging in

frequent discussion with the WIA National President Michael Owen VK3KI. The issue was also vigorously



VK3 signing off on the National WIA

discussed at the WIA Victoria AGM on 26 May.

Paramount at all times was that the ultimate decision by WIA Victoria would be made by the membership. The

vote at the 21 July consultative meeting was 66 in favour and three opposed to the recommendation of the WIA Victoria Council.

WIA Victoria will continue as a statewide membership organisation, providing services to members, charge a separate membership subscription, and support WIA National. It has registered the business name Amateur Radio Victoria that is expected to be phased in over the next year, while use of the names Wireless Institute of Australia Victorian Division and WIA Victoria can continue under certain circumstances.

The 1,100 WIA Victoria members, when their memberships are due for renewal, will receive invitations asking them to agree to be members of WIA National and invited to continue their membership with WIA Victoria.

## OZGEAR

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### • VHF/UHF Transceivers -

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8900R, VX-1, 2R, 5R, 7R, VX150

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## ALARA

Christine Taylor VK5CTY

### The Contest

August is the most important month in the VK amateur radio calendar for contests. The Remembrance Day Contest comes first and I hope all of you will participate in that for the honour of your state and in respect for those who helped to make Australia such a great and safe place to live.

At the end of the month, 28th and 29th August, to be precise, we have the ALARA Contest. As usual the contest runs for 36 hours so we have two 80-metre opportunities.

All the details are in the ALARA Newsletter and in AR so there is no excuse not to know when it all happens.

Please try to make some contacts. Last year the response was terrible. Conditions on air were not good but they were better than the results suggest. Let us all be there sometime, either on 80-metres on the Saturday or Sunday evening or on one of the other HF bands during the day. There will be people listening for you.

OMs and Clubs and SWLs are more than welcome. Please participate and please send in your logs. If you would like a very attractive Award to put up on your brag wall, you can make the required number of contacts during the Contest. You need ten ALARA members from at least five VK call areas. Send applications to the Awards Custodian Jean Shaw 10 Huntingfield Drive, Hoppers Crossing, Vic 3029.

After the contest do remember to send in your log. Let's give Marilyn some work to do. No matter how small the number of contacts you have, please do send in the log. They can be posted, or emailed. Details in the Newsletter and AR.

### 222 Net

Propagation is very good at the moment on 20-metres so why not call into the 222 DXYL Net on 14.222 MHz one Monday afternoon from 0530 Zulu (officially) or before that, from about 0500 Zulu (unofficially).

The net is again being run most often by Dave ZL1AMN and usually has three or four ZL stations and four or five VK

stations as well as several regular DX stations. The chatter is informal and pleasant when conditions are as good as they are at the moment.

Go on. Have a go!

### Vic's marvellous gift to ALARA

Dot VK2DB has had the housing of the radio equipment so kindly donated by Vic VK2EVK, last years, well it has reached its new home at last. As I told you there is a new interest in amateur radio among the scouts and guides, especially after the big Jamboree in the Adelaide Hills in January this year. The following is an item from the ALARA Newsletter that gives a bit of background and contains a report from Leanne Adcock the Coordinator of RIG.

"The HF radio which was donated to ALARA by Vic VK2EVK last year is going to a very good home in South Australia. The Scouts have a Radio Interest Group called RIG at Glenelg.

"The coordinator is Leanne Adcock, her OM is an amateur and she has a number of people assisting, including Jeanne VK5JQ and OM Keith VK5OQ. Many of our ALARA ladies have helped the Scouts and Guides for many years and as the Foundation Licence is not far away, the interest is building among the young people.

"The RIG group recently had a long hike with 420 children looked after by the Scout leaders and 18 amateurs including some YLs.

"After Christmas (at the World Jamboree) they held a JOTA with amateurs bringing their own equipment. Eleven hours a day for nine days, fifteen amateurs manned the stations using HF, VHF, UHF, IRLP, SSTV, Echolink and even CW. About 5,500 of the 11,000 Scouts and their Leaders visited the radio site and took part in many contacts. They were all very keen and there were long queues outside.

"The Leaders and Scouts will be erecting aerials (at the new home of Vic's radios) in a few weeks so hopefully all should be ready for the ALARA Contest in August."

We look forward to hearing from them at the end of August.

# Silent Key

## Charles John Robinson VK7KP

It saddens me to inform you that Chas (my OM) passed away peacefully in his sleep during the early hours of June 23rd, 2004, at the age of 96.

Chas was born in Launceston, Tasmania, and became a Saddle Maker by trade. His primary interests were Photography and Amateur Radio.

In 1938, Chas passed the AOCP and issued VK7KR as his first call sign.

During WWII, he was an aerial photographer with the RAAF (Rank of Sergeant). Chas was seconded to the NEI 18<sup>th</sup> Squadron operating in New Guinea, and he took many reconnaissance photographs from B-25 Mitchell Bombers.

After WWII, Chas's career was with Kodak in Victoria until his retirement at sixty-five.

In 1947 he was issued his VK3 license, VK3ACR.

Chas loved the challenge of constructing and using homebrew gear. Home brew equipment was used on 2 meters, HF, and 160 meters. Around 1965 he began using commercial equipment for HF SSB and modified commercial car phones for the FM band on 2 metre.



When OSCAR-6 was launched in the early 1970s, Chas became intrigued with amateur satellite communications. Also in the early seventies, Chas ran the AMSAT-VK net, and was awarded a lifetime membership of AMSAT. This facet of Ham radio led him into RTTY and computing. Chas also loved packet radio.

In 1989, after retirement, Chas and XYL returned to Launceston. Here he established a new radio shack, with the final call sign of VK7KP.

He continued with his passionate love of Amateur Radio, Computers, Internet and electronics, remaining active with regular Schedules on 80 meters until his health deteriorated in the last few weeks of his life.

Murray Robinson VK7YBE (son)

## ALARA continued

### Luncheons, especially birthday luncheons

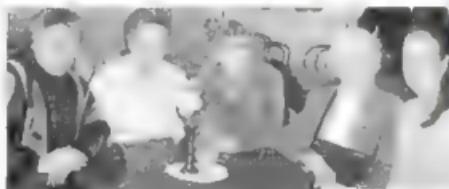
July is ALARA's birthday month so usually special luncheons are arranged if possible. The VK8 girls had their special luncheon at the end of June. VK3 and VK5 luncheons are in July, in VK3 the usual day is designated special, in VK5 we are greedy, we have the usual one on the second Friday and another one on the last Sunday of the month when the OMs associated with the YLs also have an extra luncheon.

We make them sit separately for their meal but they are allowed to join us for coffee! Cheeky aren't we?

Although the photos from the

actual occasions will be too late for this bulletin we do have a photo from the May luncheon in VK3-land, sent to us by a newly rejoined member Kathy VK3XBA. Welcome and thank you Kathy HINT HINT! I LOVE PHOTOS

ar



The VK3 group: Kathy VK3XBA, Carol ZL2VO, Gwen VK3DYL, Mavis VK3KS and Muriel May. Not in photo Wayne ZL2VN and Niel May VK3KNM.

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## Alternative approach to the "Mode-J" de-sense problem

Going way back to Oscar-8 days the problem of receiver de-sensing on "J" mode was an added complication to operating this mode.

Its root cause is the third harmonic of the 2 metre transmit frequency falling close to the 70cm down-link frequency. The people charged with designing satellite frequency plans are aware of this of course, and the frequencies are chosen so that no direct relationship exists between the two frequencies. That would make full duplex operation well nigh impossible.

In practice, however, most installations will involve highly sensitive pre-amplifiers and high gain antennas in close proximity. Receiver de-sensing can be a real problem due to the proximity of the third harmonic and can ruin an otherwise good station's performance. It's a depressing experience to see the receiver "S" meter fall to zero when you press the talk button. You can kiss full duplex operation goodbye.

The conventional wisdom in the early days was to construct an "inter-digital filter", a device which had been pioneered in this part of the world by the ATV gang. The filters were first made in a 3 or 4 section die-cast box with tuned rods made from 1/8" bronze welding rod. They worked well but were eventually superseded by printed circuit board versions using strip-line techniques. I made and used both kinds when AO-8 was in its prime.

When the digital satellites appeared

on the scene and full duplex operation became essential rather than just desirable for maximum download efficiency, more isolation was required and the day of the cavity filter was upon us. I made my cavity filter from 3" diameter copper tube with brass tuning parts and "N" connectors. It was machined accurately and soft welded together using low-temperature eutectic methods. It is still in operation at the mast-head after more than 12 years of operation and still gives such good isolation that the 70cm "S" meter barely moves when the 2 metre transmitter keys up. About the only improvement would have been to silver plate the inside surfaces. At the time some purists did that but the likely improvement was only a dB or so and in most cases it wasn't warranted.

However if you do not have engineering facilities at your disposal the successful construction of such a device could be beyond your means. Many people have avoided mode-J as a result. An alternative approach was aired in a recent discussion on the AMSAT-BB. As my satellite antenna system is more or less cast in concrete and works well I have not tried out these suggestions but they seemed well-founded and a number of people attest to their effectiveness. The first suggestion was to

use a Diamond MX-72N duplexer in line with the 70 cm side, and terminating the 2 metre side into a 50 ohm load.

Another similar approach was to use a Comet CF-418C duplexer as the de-sense filter. It was claimed in that article that you do not need to terminate the VHF port, just use the UHF port as a high-pass filter. I have not checked to see if the above mentioned duplexers are available in VK but it should be possible to find a similar unit on the market.

There is obviously room for experimentation in this area. I know of operators who have made co-ax cable duplexer devices for this purpose (we used to call them *diplexers*) but the test gear and expertise required has worked against their widespread adoption. The availability of multi-band antennas for VHF/UHF radios has resulted in their companion duplexers being available at a reasonable cost. It may well prove to be a permanent solution to this sticky problem on mode "J".

This mode became popular with satellite builders as the 2 metre band became more and more chaotic in many parts of the world with rising ambient noise levels and piracy running rife. For most operators it is still a viable mode so it is still being built in to new satellites today.

## Echo successfully launched, becomes AMSAT-OSCAR-51 (AO-51)

On June 29th Chuck Green N0ADI, reported from the Baikonur Cosmodrome that the launch of AMSAT Echo and several other satellites occurred on time at 6/29/2004 0630 UTC.

Chuck reported that he watched the rocket climb out and said it appeared to be flying straight and true. In a second phone call some 18 minutes later he confirmed that the launch carrying AMSAT OSCAR Echo was successful and that all spacecraft had separated successfully.

There was a flurry of activity on the AMSAT-BB with old timers confirming the telemetry and newcomers peppering the BB with questions regarding setting

up their station for this new bird. Mike Kingery KE4AZN quickly published a web site for forwarding telemetry files to the command team. It was pleasing to note the number of VK stations who had downloaded the telemetry decoding program "TlmEcho" from the web site and began almost immediately to send in captured data.

From day to day we watched the telemetry data as the controllers proceeded with uploading software to

the satellite. The WOD (Whole Orbit Data) software was loaded and the controllers began to analyse files as they came in. As a result adjustments were made to the on-board settings resulting in increased power availability from the solar panels.

On Wednesday 7th July, Bill Tynan W3XO announced that Echo had been allocated an Oscar number and it became AMSAT-OSCAR-51 or AO-51. Look for keplerian elements under this

# PLC/BPL in Australia: progress, or a cause for concern?

**Proposals for Power Line Communications or Broadband over Power Lines (BPL) in Australia concern many users of the radio frequency spectrum, including radio amateurs.**

WIA President, Michael Owen, VK3KI said recently that the WIA's position in relation to BPL is that it supports increasing broadband access and broadband competitiveness in Australia, but in a way that does not cause interference to legitimate users of the High Frequency spectrum. The WIA supports the development by the ACA of policies for BPL that protect existing users.

The WIA believes that one of the

problems associated with BPL is that trials on a limited basis are not good indicators, and that the full effects of a problematic technology will not be seen with such trials. The WIA considers that BPL will not really serve the community's long run needs because of its limited bandwidth.

A deep fibre network is to be preferred to using long runs of power lines.

The WIA has appointed a team to deal with this issue.

WIA President has appointed Phil Wait, VK2DKN the director responsible for developing and advocating the WIA's position in relation to BPL.

He has asked Owen Duffy, VK1OD Barry White, VK2AAB and David Wardlaw, VK3ADW to assist Phil, as the WIA's BPL Team.

A report on a recent small trial in Hobart of BPL to some 4 houses and 2 floors of the Aurora building is on the WIA website.

## AMSAT continued

designation on the Celestrak web site.

At the time of writing this column the new satellite is still being commissioned. By the time you read this it should be well and truly in use by the amateur radio satellite community. Details are available on the recently revamped AMSAT-NA web site. Follow the links to Project Echo.

There's talk of bringing back the "experimenter's days". They were fun. In the early days of Oscar 10 and 13 Wednesdays were often scheduled to run more exotic modes and to have QRP days when one could make contacts with a few tens of milliwatts of power. With modes like high speed data and bands like 13 cm, AO-51 promises to be an exciting addition to the Oscar fleet.

## SO-50 can now be switched on by users

Robin Haughton VE3FRH, President of AMSAT-NA recently released details of how users may turn on the 10 minute timer on SO-50. This will take a big load off the control stations who have been turning it on each time it rises at their locations. The power budget is such that this precaution is no longer necessary. Here is the sequence for switching the repeater on.

- 1) Transmit on 145.850 MHz with a tone of 74.4 Hz to arm the 10 minute timer on board the spacecraft.
- 2) Now transmit on 145.850 MHz (FM Voice) using 67.0 Hz to PT the repeater on and off within the 10 minute window.
- 3) Sending the 74.4 tone again within the 10 minute window will reset the 10 minute timer.

The spacecraft repeater consists

of a miniature VHF repeater with a sensitivity of -124 dbm, having an IF bandwidth of 15 kHz. The receive antenna is a 1/4 wave vertical mounted in the top corner of the spacecraft. The receive audio is filtered and conditioned then gated in the control electronics prior to feeding it to the 250 mW Transmitter. The downlink antenna is a 1/4 wave mounted in the bottom corner of the spacecraft and canted at 45 degrees inward.

Thank you Robin, this will be welcome news for SO-50 users.

## The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

## AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.885 MHz at 1000utc with early check-ins at 0945utc. In summer (end of October until end of March) the net meets on 7.088 MHz at 0800utc with early check-ins at 0845utc. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,  
9 Horner Rd,  
Clarence Park, SA, 5034  
Graham's email address is:  
vk5agr@amsat.org

Plan ahead...

JOTA:

Jamboree On The Air  
October 16th and 17th

# Beyond our shores

David A. Pilley VK2AYD  
davpil@midcoast.com.au

This month's BOS is dedicated to our near neighbour, New Zealand. Whilst our ACA is proposing new changes to our hobby, so are our friends across the water.

## New Zealand

### New Directions in Amateur Radio Licensing in New Zealand

There are new directions in Amateur Radio Licensing in New Zealand. The changes started on 17 June when a new revised Schedule 3 attached to the ZL licence came into effect with other changes taking effect over the next 18 months or more. The news is all good. Many long-standing problems are being eliminated. Some of the changes are believed to be world firsts.

The following is a summary of essential points from the report by Fred Johnson MNZM ZL2AMJ, NZART Administration Liaison Officer, given at the NZART Conference, Blenheim, 5 June 2004.

There has been a complete review of the conditions for the Amateur Radio Licence in New Zealand, the most thorough review ever. It commenced with a letter on 18 July 2003 from NZART to the Ministry of Economic Development, Radio Spectrum Management group (RSM), asking for the many successful outcomes for the Amateur Service from the World Radiocommunications Conference 2003 to be implemented in New Zealand. Your NZART ALO has been working with RSM to develop these new requirements. NZART Council has been kept apprised of the developments.

The Ministry is changing its licensing software system to SMART (Spectrum Management and Registration Technology) and this system is expected to come on-stream in about 18 months. Some changes may have to wait for this new system to be operating as explained in the following notes.

Some of the new 'rules' to come into effect are:

1. A callsign must be transmitted at least once every 15 minutes during communications.
2. The permitted maximum transmitter power output for an amateur station is quoted with one figure: 500 watt PEP. This is defined in the ITU RR 1.157. With only one figure, it is now mode-independent.
3. Third-party traffic, which since 1988 has been permitted nationally within New Zealand, is now permitted internationally with any country. (Subject to the other country being permitted third-party traffic).
4. Licensed overseas visitors, i.e. persons holding a current amateur certificate of competency, authorisation, or licence issued by another administration, may operate an amateur station in New Zealand under a General User Radio Licence (GURL) with similar privileges to a ZL resident station for a period not exceeding 90 days, provided the certificate, authorisation or licence meets the requirements of Recommendation ITU-R M.1544, or CEPT T/R 61-01, or CEPT T/R 61-02, and is produced at the request of the Chief Executive.
5. The present country-to-country reciprocal licence agreements will disappear in time as more countries directly recognise the licences issued by other administrations. Cross-border travel by radio amateurs will become easier.
6. The callsign to be used by a visitor from overseas will be the home-country callsign as allocated by the other administration with an added prefix "ZL" or an added suffix "ZL" which is to be separated from the national callsign by the character "/" (telegraphy), or the word "stroke" (telephony).
7. Encoded transmissions by radio amateurs remain prohibited but are now permitted for the licensees of remotely operated stations, for example repeater and beacon trustees and for satellite control.
8. The present unwanted emission limit figure for amateur stations -56dBW is being discarded. The ETSI standard ETS 300 684 is being adopted to apply to any emissions falling outside amateur bands.
9. Licensees are now encouraged to prepare for, and to meet, the communication needs of national and international disaster relief. In New Zealand this has been an agreed and understood arrangement for decades but any written authorisation seems to have been lost in history. This international provision is now reflected in the new licence schedule.
10. To demonstrate competency in the Morse code is no longer a requirement for an amateur radio licence. There is no mention of Morse code in the new licensing provisions.
11. Morse testing by NZART will continue, voluntary for persons who wish to take a test for challenge purposes. NZART's Examinations Division could issue speed-achievement certificates. Some overseas countries are retaining a mandatory Morse requirement so a testing facility will be required for some overseas travellers for reciprocal-licensing purposes.
12. There is only one grade of amateur operator licence in New Zealand, the GENERAL AMATEUR LICENCE. The word "General" must continue meantime because it is hard-entered in the Ministry's existing database. This may change with the new SMART system expected in 2005 but is undecided.
13. All existing Limited Amateur licensees will automatically become General Amateur licensees on 17 June 2004 irrespective of what is written on their existing licences.
14. The very few present legacy Novice licensees and their separate conditions will continue and will be manually processed outside the database by the Ministry until extinction. No new Novice licences are possible. Novice Licenses

Robin Harwood VK7RH  
vk7rh@wia.org.au

## Midwinter conditions better than 2003

Propagation was better, particularly on the lower frequency bands, although the higher bands have been not as good as then. This is primarily due to rapid descent of the sunspot numbers. It also helped that the offending switch-mode power supply on my next door neighbour's television is no longer there.

The precarious situation with Iraq continues, although sovereignty was restored on 28th June. I expect a shortwave service will emerge soon, although satellite based television seems to be the preferred delivery mode. The American backed "Radio Free Iraq" disappeared from shortwave in February with the emergence of an independent media within Iraq. Neighbouring Iran has increased their Arabic output of the external service, for Iraq and the adjoining Gulf States.

There definitely has been an escalation in the number and frequency of Arabic language transmissions since the restoration of Iraqi sovereignty. As I previously mentioned, satellite television is very influential within the region and extremely graphic. However, it is worth remembering that car radios, fitted with shortwave bands, are sold in the Gulf States.

The VOA in Washington has changed the focus of their news broadcasts, to

reflect the editorial priorities of the current Administration. This has caused industrial and political conflict between the staff and the IBB. Apparently the editorial independence of the VOA has been an ongoing issue over many decades between the Administration and the news staff.

Finland has stated that they have no plans to leave shortwave, despite speculation that Helsinki was closing at the end of this year. It is the only shortwave station with a non-religious weekly news bulletin in classical Latin. It currently only broadcasts in Finnish, Swedish and Russian, in addition to the weekly Latin bulletin.

This month, the Summer Olympic Games are being staged in Athens. Many broadcasts will be live. I expect that ERT, the Greek broadcaster will be in the forefront. They certainly were excited when Greece unexpectedly won the European Soccer championship in Portugal. Athens is best heard here on 9420 at 2100 and later at 0500 onwards. Broadcasts are in Greek but short news bulletins in either Spanish or English are heard towards the end of the targeted transmissions.

Croatia is being easily heard here on 9925 at 2200 with broadcasts in Croatian. At 2230, there is a Spanish program for

Latin America. Signal strength has held up surprisingly well throughout the day. Broadcasts for Australasia are on 13820 at 0700 via senders in Juelich, Germany. I often hear English programming, complete with Australian accents, which is not surprising as there are quite a number of Australians with a Croatian heritage.

World Harvest Radio has indeed purchased WSHB, the former Christian Science senders in South Carolina. They also own former senders of the Christian Science church in Maine. WHRI in Noblesville, Indiana has consequently been closed and the 500 kW senders in Maine and South Carolina are being run at quarter- to half-power. KWHR in Hawaii has two senders but apparently is no longer running Radio Free Asia programming, concentrating on religious output.

Don't forget Remembrance Day is on this month and since the January 1st deregulation, I expect that activity will be more intense on HF. 40 metre activity has dramatically increased, especially at night. 80 metres has become thinner, although there is considerable interest in the DX window between 3775 and 3800, especially at greyline peaks from various DX locations.



## Beyond our shores continued

require a pass in the examination to attain General grade and are encouraged to do so.

15. Existing Limited and Novice callsigns will be retained.

16. A change of callsign can be requested following the existing rules. There being only one licence grade, licences will no longer indicate a grade.

17. All amateur bands remain the same but the LF band is being listed for the first time as an allocated amateur band and is extended from 130 to 190 kHz.

18. The band 7.1 to 7.2 MHz is to become amateur exclusive worldwide in 2009 - but that's a future excitement.

There continues to be only one amateur radio examination, computer-generated, administered by NZART. The 600-question question-bank is being revised for the new conditions. New exam-generating software will soon be available for exam supervisors. Exams conducted after 17 June should be for the new conditions.

The present generally-established entry route into amateur radio is to pass the one examination and then spend some time on the VHF bands gaining operating experience. The future entry path into amateur radio continues this pattern. A pass in the examination is followed by access to several HF bands and to VHF for a 3-month period to gain practical operating experience and with

at least 50 contacts logged. Then access is permitted to all amateur bands. This requirement is only for new amateurs licensed after 17 June 2004.

## Finally

These changes are being introduced over a lengthy period. It is suggested that remits for further changes or tinkering be held off for several years until the new system settles down and is properly studied and understood.

With one examination, with only one licence grade, and with new and simplified procedures, New Zealand Amateur Radio is positioned for an exciting future.

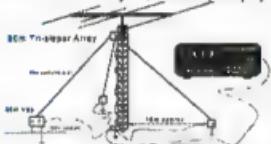
(sourced to Jim Meachen ZL2BHF  
Editor 'infoline')

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## Club news

### Adelaide Hills Amateur Radio Society

The June meeting was addressed by Geoff VK5TY with the story of the first Australia amateur radio satellite, Australis OSCAR 5 (Orbiting Satellite for Communication through Amateur Radio).

Before 1957 the only satellite of the earth was the moon. Then Sputnik appeared and the race was on.

As you would expect, it was not long before the amateurs became involved in the new technology.

Then, in 1967 Australian amateurs decided to 'have a go'. A group in Melbourne was already working on the idea when it was presented to the Federal Convention in 1967 where it was given the 'go ahead.'

It was several years before the prototype was shown at another convention just before it was shipped to the USA for launch.

An interesting talk about a typical

example of Aussie ingenuity. To save space and cost the antennae of our Australis Oscar used a Stanley steel tape measure. If you have ever had one of these in which the spring failed you will recognise the folded tape easily.

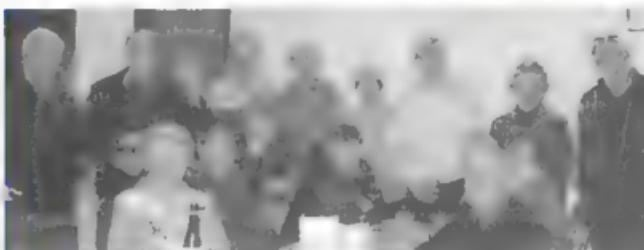
The July meeting is the Mid-year Dinner, but if you are in Adelaide for the third Thursday of a month, please come to a meeting at the Blackwood High School at 7.30pm.

### The Lower Murray Mid-year Dinner

This was held in Tailem Bend this time and was very well attended. As the photo shows there were 16 people there that night when a good time was had by all.

These regular dinner meetings are a good way to get everyone together and to involve the 'other halfs' so they feel part of the scene.

Christine Taylor VK5CTY



The Lower Murray Mid-year Dinner

### NERC

Friday July 10th was the club AGM. 35 members and family were treated to a meal of chicken, pizza, salads and delicious sweets. Drinks were consumed liberally and a good night was had by all. The formal part of the evening was conducted by Geoff Glynn-Roe. Geoff, a retired bank manager audits the club accounts and presided over the AGM. The following people were elected to the committee. Peter Watts, John Butler, Brian Roberts, Eric Whittington, David Clegg, Trevor Quick, Warren Frost and Alex McCallum.

By the time you read these notes the Rally SA will be over. Thanks to all

volunteers. I will give more information at a later date.

The August 13th meeting will be a talk by David Woolford on video editing and production. September meeting will be a talk on CPR by John McCallum. This will include demonstration of CPR techniques on the mechanical "dummies". This is a technique that we should all be aware of.

Meetings are held on the second Friday of each month at the Ardrossan Primary School, Saarinen Ave St Agnes. Meetings start at 1930 hours.

David Clegg Secretary

**Contest Calendar August - October**

6	Aug	QRP Day	(CW/SSB/FM)
8/9	Aug	Worked All Europe DX Contest	(CW)
14/15	Aug	RD Contest	(CW/SSB/FM)
21/22	Aug	TOEC WW Grid Contest	(CW)
28/29	Aug	SCC RTTY Championship	(RTTY)
28/29	Aug	YO DX HF Contest	(CW/SSB)
28/29	Aug	ALARA Contest	(CW/SSB)
4/5	Sep	All Asian DX	(SSB)
11/12	Sep	Worked All Europe DX Contest	(SSB)
25/26	Sep	CQ/RJ WW RTTY DX Contest	(RTTY)
2/3	Oct	Oceania DX Contest	(SSB)
2	Oct	Psk 31 Rumble	
3	Oct	RSGB 21/28 MHz Contest	(SSB)
9/10	Oct	Oceania DX Contest	(CW)
16/17	Oct	JARTS WW RTTY Contest	
16/17	Oct	Worked All Germany Contest	(CW/SSB)
17	Oct	Asia-Pacific Sprint Contest	(CW)
17	Oct	RSGB 21/28 MHz Contest	(CW)
23/24	Oct	CWQ WW DX Contest	(SSB)

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- RG58C/U Belden 8259 @ \$0.90 per metre
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- RG8/U - RF400 Belden 7810 Low Loss Sweep Tested to 6000MHz @ \$6.30 per metre
  
- RG58: B80-006 UHF connector (M) @ \$7.65 each
- RG8/213: B80-001 UHF connector (M) @ \$8.80 each
- RG213: B30-001 N connector (M) @ \$9.10 each
- RG8: B30-041 N connector(M) @ \$14.00 each



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## Contests

### Greetings to all contesters,

Thank you for taking part in the recent group of VK/ZL contests. Without your participation there would be no contests at all.

However, please prepare NOW for the RD Contest in just a week or so, also QRP Day Contest (see rules for both of these in July column).

For those interested in the "big" ones, the Oceania DX Contest is coming round again in October. This is an opportunity

for VK/ZLs to give times for DX stations to make contacts with us "down under". Please support this event, even though it is a big job assessing all the logs. Believe me, the overseas stations are very happy to have contacts with us, as propagation is not always favourable to them.

### Linux anyone?

Is there anyone out there who is using Linux for AR work? I have just switched over, but as yet have found little in the AR field to run under that platform. Please let me know.

73, Ian Godsell VK3JJS

## Results Harry Angel Sprint 2004

### CW

1st	VK5NJ	38 points	John Nieuwenhuizen
2ND	VK4BUI	16	Les. Styles
3RD	VK2CTN	14	Chris. Thompson

7TH VK2LCD 28 Chris Maagher

8TH VK4KNN 26 Barry Molkenkin

9TH VK5AIC 20 Ian Clayton

10TH VK7JGD 18 Garry Duance

11TH VK3DBQ 16 Jim Baxter

12TH VK2JHN 9 Walter Munn

### SSB

1ST	VK5AY	55 points	Bronte Wood
2ND	VK5SR	48	SERG (SA) Club Station
3RD	VK5UBC	34	Brian Cleland
4TH	VK5USB	33	Richard Pipe
5TH	VK6LG	31	Ron Hartley
6TH	VK6ZN/2	30	John Howlett

7TH VK2LCD 28 Chris Maagher

8TH VK4KNN 26 Barry Molkenkin

9TH VK5AIC 20 Ian Clayton

10TH VK7JGD 18 Garry Duance

11TH VK3DBQ 16 Jim Baxter

12TH VK2JHN 9 Walter Munn

### Mixed

1ST VK3JS 58 points Ian Godsell

2ND VK2BPL ■■ Paul Linsley

3RD VK8AV 34 Alan Viegas

4TH VK2YN 28 Lindsay Collins

Total Logs: 19

### Manager's comments

The QRN on the night was very strong, one of the worst that I had heard for some time. Nevertheless it was most pleasing to tune around and hear the level of activity. It was very heartening to hear some of the more recent comers to HF taking the opportunity to try a simple, straightforward contest. The

emphasis was certainly on phone work, so that we dedicated CWers have now to turn more and more to the Mixed Mode section.

No-one mentioned anything about the change of day for this event, so I take it that it was not such a dreadful thing as may have been imagined. Next year,

2005, ANZAC Day will be on a Monday, so which will be the better day for the contest - Friday or Saturday night? Any suggestions most welcome.

I thank everyone who took part and sent in a log.

73, Ian Godsell VK3JJS

## 2003 Oceania DX Contest results

27 June 2004

The report and full results for the 2003 Oceania DX contest are now available for you to view on-line at the Oceania DX Contest web site - go to <http://www.oceaniadxcontest.com>.

CONGRATULATIONS to all of the 2003 winners and thank you to everyone who participated to make this contest a success

Special congratulations go to KH7X (op KH6ND) who hit the jackpot by winning both the PHONE and CW sections in the Oceania SOAB category. Despite the depressed solar conditions, overall activity was similar to 2002 and

a number of new records were set. There was also a good turn out from Oceania DX stations outside VK or ZL, including prefixes such as 3D2, 4W, AH2, KH6, DU, FK, ZK and YB/YC.

We are currently in the process of arranging the production and distribution of the various certificates and awards.

### Please note:

The 68th Oceania DX contest will be held on the first two weekends of October 2004 as follows:

PHONE 0800 UTC Saturday 2  
Section: October to 0800 UTC

Sunday 3 October 2004

CW 0800 UTC Saturday 9  
Section: October to 0800 UTC

Sunday 10 October 2004

The full 2004 rules are available at <http://www.oceaniaidxcontest.com>. In order to further reduce the amount of effort required from volunteers and get the results out more quickly, the following rule changes are being introduced for the 2004 contest:

1. All logs with more than 50 QSOs are to be submitted via email;
2. All email logs are to be submitted in the required Cabrillo format;
3. Only logs with more than 10 valid QSOs will qualify for an award.

Finally, thank you to the members of the Oceania DX Contest Committee and the additional log checking volunteers (ZL2AOV and ZL2AOH) who carried out the work behind the scenes for the 2003 contest. We also acknowledge the support provided by NZART, WIA and the various sponsors of the awards.

We look forward to seeing you all again in the 2004 contest. Let's hope for some good conditions and encourage plenty of activity to make it the biggest and best event so far.

73 from

Oceania DX Contest Committee (VK3TZ, VK4EMM, VK2FHN, VK2AYD, VK1JDX, VK2CZ, ZL1AZE, ZL3GA, and ZL2BSJJ)

*continued next page*

## Continent: Oceania

### Australia

CallSign	Category	Bands	QSOs	Points	Mode	Score
VK4EMM	SINGLE-OP	ALL	993	2433	581	1413573
VKAAN	SINGLE-OP	ALL	1057	2114	423	894222
VK7GN	SINGLE OP	ALL	688	1200	369	442800
VK2FHN	SINGLE-OP	ALL	377	793	240	190320
VK8AV	SINGLE-OP	ALL	250	458	199	91142
VK4BAY	SINGLE-OP	ALL	281	470	184	86480
VK4TI	SINGLE-OP	ALL	230	455	171	77805
VK4BUI	SINGLE-OP	ALL	234	429	180	77220
VK2CZ	SINGLE-OP	ALL	110	814	87	70818
VK3TZ	SINGLE-OP	ALL	139	276	127	35052
VK3JS	SINGLE-OP	ALL	80	435	59	25865
VK3EVG	SINGLE-OP	ALL	41	103	38	3914
VK3KTO	SINGLE-OP	ALL	34	78	33	2574
VK2IT	SINGLE-OP	ALL	11	15	11	185
VK5UE	SINGLE-OP	ALL	12	12	12	144
VK3IO	SINGLE-OP	40M	302	1510	143	215930
VK4FJ	SINGLE-OP	15M	434	868	211	183148
VK2XT	SINGLE-OP	15M	375	750	148	111000
VK2VZQ	SINGLE-OP	15M	189	378	106	40088
VK6ANC	MULTI-ONE	ALL	1018	1757	552	989864

# Riverina Field Day

## 8th August

Twin Cities Radio and Electronics Club inc.

The Riverina Field Day, Sunday 8th August 2004  
held at

*Murray High School*

on the corner of Kaitlers Road and Kemp Street Lavington.

*It will be located in the assembly hall.*

**Opening times will be 10 am.**

**Closing time is 3 pm.**

**Food will be supplied by caterers  
on site at reasonable prices**

**Tea and Coffee will be free to  
everyone.**

There are a number of reasonable motels  
located nearby and in Albury/Wodonga.

On Saturday evening some of the club  
members will be having an informal  
dinner at the Albury Commercial Club  
Bistro where the prices are \$12.00 a head  
for a very good 3 course meal of your  
choice.

### Contact:

Peter Presutti VK2CIM 02 6040 3210  
[presutti@tpg.com.au](mailto:presutti@tpg.com.au)  
Greg Sergeant VK2EXA 02 6021 5438  
[sarge@iinet.net.au](mailto:sarge@iinet.net.au)  
Fred Armstrong VK3XLV 02 6026 7350  
[namsat@bigpond.com](mailto:namsat@bigpond.com)

## RADIO AMATEURS OLD TIMERS CLUB OF SA

**The ANNUAL LUNCHEON will be held on Thursday 21 October 2004 at 12 noon for  
12 30pm lunch at Marion Hotel, Marion Road, Mitchell Park, Adelaide.**

RSVP Ray Deane VK5RK Phone 08 8271 5401

# 2004 80 Metre VK/ trans-Tasman Contests

## Complete Results:

### "Participation factor":

**PHONE:** 25 ZLs, and 182 VKs participated.  $25/182 = 0.137$ . All ZL "overseas call-area" group bonus points were reduced by multiplying by 0.137.

**CW:** 28 VKs, and 28 ZLs participated.  $28/28 = 0.00$ . Therefore, the Participation Factor was not applied.

### Category 1 (Phone) /1

Call sign	Score	Contacts
1st. VK5AY	2968	268
2nd. VK2CZ	2345	247
3rd. VK2WT	2328	214
4. VK8LG	2162	159
5. VK3IO	2113	239
6. VK3FRC multi	2089	239
7. VK2HZ	2031	235
8. VK4SN	1977	219
9. ZL1ALZ	1928	186
10. VK3TZ	1848	206
11. ZL4AL multi	1784	170
12. VK2EP	1732	203
13. ZL2AUB	1723	168
14. VK2UW	1660	210
15. VK8DXI	1607	140

### Category 1 (Phone) /2

Call sign	Score	Contacts
16. VK7GN	1578	194
17. VK2AKB	1489	191
18. VK2KVA/Q	1382	150
19. VK2LCD/Q	1307	120
VK3JWZ*	1298	174
20. ZL4AA	1236	120
21. ZL4IM	1230	113
22. VK5KBJ	1214	161
23. VK5MH	1210	146
24. ZL1AAR	1125	115
25. ZL4PW	1080	108
26. VK3UMB/Q	1075	149
27. VK2BPL	938	133
28. ZL2AOV	762	76
29. VK1WJ	709	102
30. VK3AVV	700	113
31. VK2LEE	700	99

### Category 1 (Phone) /3

Call sign	Score	Contacts
32. VK5KMC	663	105
33. ZL2TW	73	73
34. VK4HDX	579	89
35. VK4AQD	532	80
36. VK2QV	523	56
37. VK6ADI	482	59
38. VK4BAY	451	73
39. VK3XAT	440	73
40. ZL2BSJ	419	43
41. VK8HST	375	60
42. VK2JHN	362	60
43. VK2VRM	194	41
44. VK7XRN	118	23
45. VK3JS/Q	118	18
46. VK2ZZ	114	27
47. VK4KML	58	14
48. VKBHPB	12	4

### Category 2 (QRP Phone)

Call sign	Score	Contacts
1st. VK2KVA	1382	150
2. VK2LCD	1307	120
3. VK3UMB	1075	148
4. VK3JS	118	18

### Category 3 (CW) /1

Call sign	Score	Contacts
1st. VK4BN	1415	119
2nd. ZL6FF	1368	102
3rd. VK7GN	1333	111
4. ZL4OL	1306	95
5. ZL2CD	1232	95
6. ZL1ALZ	1173	91

### Category 3 (CW) /2

Call sign	Score	Contacts
19. VK2FDU	384	45
20. ZL2TX	378	37
21. VK8AV	270	31
22. VK3JWC/Q	111	16
23. VK4CEU/Q	76	10
24. VK1BL	48	10

### Category 5 (SWL)

Call sign	Score	Comments
ZL14B	1348	

Call sign	Score	Comments
10. VK2BPL	1070	81
11. ZL1TW	951	81
12. VK3MV	920	78
13. ZL2ALV/Q	848	77
14. VK3BBT	721	65
15. VK1WJ	564	45
16. ZL4PW	493	47
17. VK5BL6/Q	407	32
18. VK2AKB	401	35

### Category 4 (QRP CW)

Call sign	Score	Comments
1st. ZL2AVL	848	77
VK5BLS	407	32
VK3JWC	111	16
VK4CEU	76	10

**Note: VK3JWC (Contest Manager)  
Cat 1 Phone score of 1298, is  
ineligible**

## Jack Hazlewood VK2AAT

Passed away Tuesday afternoon July 6th 2004 His funeral was held on Friday July 9th 2004

Jack was one of the original WIA NSW members who spent many hours at working bees during the construction of the Dural premises.

Submitted by Trevor Huntley VK2TM

## Ian Leslie Pogson VK2AZN

Ian Pogson, VK2AZN passed away peacefully at his Wentworth Falls home on Saturday morning, 26th June 2004. Ian was born on 1st October 1917 at West Pennant Hills and passed his A.O.C.P on 15th March 1938.

Ian was a very inventive and knowledgeable person. He was also very helpful in giving advice on technical matters and would always listen to, and was interested in, what others were doing technically or otherwise.

His first place of technical employment was S.T.C during the years of the Second World War and into the 1950's. He worked at A.B.C radio during the late 1950s and Radio, Television and Hobbies / Electronics Australia during the 1960s and 1970s.

Ian's major interests were precise timekeeping (he kept V.N.G's clocks running on time), antennas and astronomy. Amongst many other things, he built three large pendulum clocks during 1949 / 1950 and they are still running strong.

He designed and built many projects at Electronics Australia, the most notable ones being the Deltabets Mk 1 and Mk 2, both of which are still running perfectly.

Ian suffered a severe heart attack approximately three months ago and he never fully recovered.

Ian will be sadly missed by his many friends and acquaintances. He is a great loss to the amateur fraternity. To his wife Dorothy, our sincere condolences and sympathy.

73s Mate.

Submitted by Errol Trimingham VK2BET.

## Geoff Page VK2BQ

Geoff was born on 2nd May 1917 in Melbourne.

After army service he worked as a civil engineer for Lockhart and later Tumut councils.

It was while he was at Tumut that he obtained his amateur licence VK2BQ in 1950. Geoff moved to Melbourne in 1960 to work as site engineer for ESSO Oil.

While in Melbourne his callsign was VK3ABQ.

Geoff retired to Warrawee around the time Hornsby and Districts Amateur Radio Club, HADARC, was formed so Geoff was an early member of the club and for many years was our auctioneer.

Geoff was a keen CW operator right up to the early 1990s.

Geoff was an early member of Australian Amateur Packet Radio Association, AAPRA, and was a committee member until his death. Geoff was a keen packet radio user and was publicity officer for AAPRA for most of the time.

Geoff had a sardonic sense of humor and always had a retort for any situation that arose. Geoff in the last year or two had heart problems and spent a few episodes in hospital.

Geoff is survived by his wife Thelma and two sons.

Barry White VK2AAB

## John Kennard VK2GJK

It is with great regret I advise John became a silent key on 15th June, 2004. He became an amateur during the 1970s and met and spoke to amateurs worldwide. During his travels he made a point of meeting many of those contacts, one of them being me and we remained great friends. Apart from Amateur Radio John (originally from England) had many other attributes including Marine Commando (UK), member of the Coffs Harbour Coastal Patrol and regular disc jockey for Belligen Community Radio 2BBB.

John went to England earlier this year to visit friends and relatives and shortly after his return, was diagnosed with a

very rare form of cancer. Fortunately he didn't suffer for too long, having wonderful support from his family, friends and Dorrigo Hospital staff. A celebration of his life was held at Dorrigo on 17th July at which money was raised for the Westpac Rescue Helicopter Appeal, which was his choice.

My sympathy and love go to his loving wife Brenda and family.

88 John

Submitted by Anne Benson VK4FAB

## Geoff Bower VK2OI

Geoff Bower VK2OI passed away on Thursday 8 July 2004 following a short illness. Geoff served as a WW2 Signalman in New Guinea. He was a keen CW DX operator often heard in recent years working DX on 160 metres from his retirement home near Lismore.

Submitted by Allan Mason VK2GR.

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# Awards

Mal Johnson VK6LC

We have developed our Award Program using the standard intelligent Microsoft xp. Excel smart spreadsheet documents. These can be saved to a common file that will run on Excel 5.0/95 & 97-2002 versions.

For those that are on internet email system we recommend you enjoy the fast service offered by our new computerised awards system. One document is used repetitively for the life of the DXCC award.

Check out our "new" 2004 release "Quad Management" DXCC award file that will take care of four awards in any mode combination, i.e. Phone, CW, RTTY and Open all in the one package, available only in Microsoft xp.

Awards information and downloadable files are available on our WIA website <http://www.wia.org.au> or by email to: awards@wia.org.au or W.I.A. Awards Manager P.O.Box 196. Cannington. Western Australia. 6987.

Mal. VK6LC

## DXCC Certificate comments

★ Mal VK6LC has sent me the draft of the new DXCC Certificate and it's a welcome change. As I'm sitting on the WIA Honor Roll with all entities worked I certainly give it my stamp of approval and will apply for the new format when it becomes available.

Regards VK3SX Bob Robinson

★ I had the opportunity to view your latest new generation Federal DXCC certificate.

I can say nothing but praise for a very well designed certificate. Colours are just great and anyone applying for this certificate should be very proud to own one or more.

Best wishes, Russ. VE6VK

★ Mal Johnson, Awards Manager for the WIA, has just sent a few copies of the latest DXCC certificates. They look good and any DXer would be proud to have them in his shack.

Hope you are able to fit them in the awards section of AR magazine in the near future.

73 Austin Condon VK5WO

★ Having read in AR that a "New" Federal Awards Website was available I attacked it with enthusiasm and have now applied for a number of VK WIA awards. My recent experiences have been most pleasing. The navigation of the website was easy. Finding the specific award, its rules and paperwork/computer data entry was self explanatory. The comprehensive set of Excel spreadsheets was very professionally constructed along with an easy to use interface. Having 35 years of IT experience I can fairly say that those involved in the development of the WIA Federal Awards Website and facilities are to be commended on their professionalism and dedication in bringing forward much fine piece work that puts our award system up with the best around, if not the best. The system allows the applicant to complete the form online and has all the country information required to that as part of the country and prefix cell. On acceptance the spreadsheet is emailed back to you with data in unchangeable form so you review DXCC status without changing those entities that have been

accepted. I cannot speak highly enough of the prompt, friendly and business like manner in which the service was provided.

During this exercise I was afforded the opportunity to look over the new 2004 award certificate. It was found to be very appropriate for current times being green and gold which is very much representative of Australia. It states its purpose, from whom it comes and for what it is presented. Thus another fine piece of work any amateur operator would be proud to display. I recommend to all amateurs that these WIA Federal Awards are truly valued and will enhance walls of any shack or office.

Jim Baxter VK3DBQ

★ I would like to express my thanks to Malcolm Johnson VK6LC for his work for the WIA.

The new DXCC certificate is another step forward in the WIA awards program.

Thanks Mal (VK6LC) for putting Australia on the world map of DXers.

73 de Ted VK2UK



# DXCC listings 30 June, 2004

Callsign	Countries	Callsign	Countries	Callsign	Countries	Callsign	Countries	Callsign	Countries
<b>Honour Roll(326)Phone</b>									
VK5MS	335/389	VK6ANC	278/280	VK5ATU	126/128	VK5UO	171/172	VK3VQ	276/293
VK4LC	335/382	VK3DP	274/277	VK2IRP	125/101	DK8AP	168/000	VK3DBQ	278/279
VE6VK	335/372	VK2CA	271/000	TG8NE	125/000	VK4AAR	144/146	VK8NSB	258/000
VK4UA	335/370	VK3UY	284/286	SM6PRX	121/128	VK8AM	138/000	VK5UO	261/255
VK5WO	335/368	VK3VQ	281/278	VK4EZ	119/125	N0TM	135/000	VK2CWS	251/263
VK6LK	335/360	VK3DBQ	280/283	VK2MH	116/118	VK7DD	131/132	VK3DQ	248/275
VK3AMK	335/364	VK2XH	257/000	VK3MRG	108/000	DL6UGF	126/000	VK2FH	243/000
VK3QI	335/349	VK8NSB	265/000	AJ4EJ	106/000	K5QNM	110/113	VK3JMB	239/000
VK3AKK	335/348	VK3CIM	254/258	VK9RS	104/000	VK5BWW	110/113	VK4DA	237/238
VK2FGI	335/341	<b>General listing-Phone</b>		VK6ISL	102/000	SM6GZN	110/111	VK8AM	236/000
VK3DYL	335/341	SV1GYG		PY2DBU	102/000	VK3DBQ	110/000	VK2BQS	183/186
VK3SX	335/341	VK8DK	249/250	SV1FTY	102/000	UR5BCJ	103/105	VK4CXQ	179/000
VK3EW	334/340	VK4AO	240/000	3W2LC	102/000	SM6PRX	101/102	VK4CHB	177/179
VK6NE	333/348	VK2FHN	238/000	VK3PA	102/000	<b>Honour Roll(326)Open</b>		9A4KA	168/000
VK2AVZ	333/344	VK3JMB	237/000	VK2EJM	101/103	VK4LC	335/382	DL8UGF	161/000
VK1ZL	333/339	VKBKTC	231/233	VK3KTO	101/102	VE6VK	335/380	VK5SATU	158/160
VK6HD	332/358	VKBAM	225/000	VK1PRG	101/000	VK4AAR	335/372	VK3VB	153/155
VK2DEJ	332/338	HS1NGR	101/000	VK4UJA	101/000	VK3JXO	148/000	VK1PRG	144/145
VK3OT	331/345	9V1RH	216/218	VK5JAZ	100/000	VK5WU	335/372	VK3SPS	140/147
VK4OH	330/337	PY2DBU	212/213	<b>Honour Roll(326)CW</b>		VK1XV	142/144	VK4EZ	140/147
VK8APK	330/335	VK4IL	212/000	VK3DVT	206/209	VK3AMK	335/354	VK3OJ	129/140
VK4AAR	330/334	VK6BH	200/000	VK3OI	334/346	VK3QI	335/350	VK7CQ	123/125
CT1EEH	330/000	PY2DBU	186/187	VK6HD	333/354	VK3OT	334/348	N0MSB	117/000
VK3CSR	329/338	VK6RZ	187/190	VK6WO	331/347	VK7BC	334/343	VK8RS	119/000
VK3YJ	327/333	VK7JAB	186/000	VE6VK	328/353	VK8HD	333/360	VK2AJE	109/000
<b>General listing-Phone</b>									
VG0VXX	184/000	<b>General listing-CW</b>		VK2AVZ	333/344	VK3OJ	333/336	VK3MPG	109/000
VK6EH	170/000	VK6RZ	315/320	VK4AAR	332/338	<b>General listing-RTTY</b>		VK3EBP	263/255
VK7BC	324/329	VK4CHB	187/188	VK3AKK	312/317	VK3AMK	200/202	VK3AMK	200/202
EA3AKN	323/331	VK2BQS	166/169	VK3KS	307/335	VK3DBQ	127/000	VK2BQS	126/128
VK5FV	323/326	VK4BP	184/000	VK4EMI	180/000	VK2UK	325/330	SP3CUG	124/000
VK3EUZ	323/324	VK4ARB	159/160	VK4LV	299/308	VK4LV	323/331	VK6RY	100/102
VK4SJ	321/322	JA8KTY	156/000	VK4ICU	291/000	<b>General listing-Open</b>		VK4FNQ	137/000
VK4LV	319/321	VK1TX	156/000	VK3JI	274/299	VK4DV	313/328	VK4ABW	109/000
VK1TX	319/000	VK2EJK	153/000	VK8MK	249/262	VK8RZ	323/328	VK6JQ	103/104
VK8ABS	318/000	VK2GSN	152/000	VK7BC	248/255	VK3JI	322/351	<b>Gen-listing 6m. Open</b>	
VK2UK	313/318	VK7LUV	146/000	VK2CWS	245/247	VK8RO	320/327	VK4CXQ	101/000
VK8RO	312/318	VK2SPS	143/145	VK3DP	245/247	VK4DV	313/328	VK4FNU	109/000
VK3JI	310/325	VK2QV	141/000	VK4ADA	237/239	VK8LC	311/314	VK4ABW	109/000
VK6LC	309/312	VK3JXO	141/000	VK3CIM	235/238	VK4ICU	311/313	VK6JQ	103/104
VK4ICU	302/305	VK6BL	137/000	VK3DQ	234/261	VK3DP	305/308	<b>Gen-listing-Satellite</b>	
VK3IR	302/308	OK1ZSV	136/000	RD3AF	233/000	VK3TS	295/298	VK4CXQ	101/000
VK6DY	297/301	VK2JAU	136/000	VK7TS	219/000	VK2HV	289/000	VK2XMT	112/114
JASEY	298/300	VK3QD	133/147	IK1ZOD	210/000	VK3CIM	284/288	VK3XDO	106/000
VK4EJ	291/293	SV1XV	130/131	DL7PA	203/000	VK6RO	190/192	VK4FNU	109/000
VK2HV	288/000	VK4FNQ	130/000	VK8AMC	278/282	VK6ANC	278/282	VK3XDO	106/000
VK4BAY	287/290	VK4VIS	127/129	VK4CXQ	174/000	PY2DBU	278/282	VK3XDO	106/000

# VHF/UHF - an expanding world

David Smith VK3HZ - [vk3hz@wia.org.au](mailto:vk3hz@wia.org.au)  
Leigh Rainbird VK2KRR - [vk2krr@telstra.com](mailto:vk2krr@telstra.com)

## Weak signal

David Smith - VK3HZ

My apologies that, owing to a production error, the July column didn't appear. So, this month, a combination of news from the last two months is included.

It seems that most of the weak signal activity at present is happening during the morning aircraft nets. Peter VK2BIT has been operating portable from a hilltop near Young on 2 m on several weekends recently, putting a good signal into Melbourne.

Mark VK2EMA in Tottenham in central NSW is being worked regularly by a number of stations in Melbourne on both 2 m and 70 cm. It appears that flights from Melbourne to Brisbane pass along the ideal path for aircraft enhancement between these two locations. Recently, VK2WWV at Trangie, northwest of Dubbo, was also heard in Melbourne.

Peter VK5ZLX has recently moved to the eastern side of the range near the Barossa Valley. With only a small yagi on a pole off the side of the shed on 144 MHz, he has already been able to work VK3IL, VK3BG and VK2KRR. Look out when Peter gets the tower up.

Since returning home from a successful Meteor Scatter Dxpedition, Rex VK7MO has quickly racked up an extra 10 grid

squares on 144 MHz EME bringing his current total to 31 squares.

There were several periods of tropo enhancement in the south of the country during the month of June, but it appeared to be a case of "the lights are on, but no-one's home" for the most part. It's a little frustrating to hear the beacons pounding in, but be unable to raise anyone at the other end.

Leigh VK2KRR reports that on June 5th, he worked Peter VK5ZLX near Barossa Valley - a distance of 735 km - with signals up to S9+20 dB. He also worked Barry VK5KCX at Gawler - 764 km - at good strength.

During the evenings of June 16th and 17th, Peter VK5ZLX and Leigh VK2KRR tried some tropo scatter tests over the 735 km path. There was no tropo duct enhancement and general conditions were poor with no beacons heard. Contacts were completed with reasonable ease, with signal reports noted at VK2KRR's end on the 16th up to S4 and on the 17th up to S7. At both ends single yagis were used with around 150 watts.

On June 21st, a slow-moving high-

pressure cell settled over western NSW, producing some good conditions. On the morning of the 21st, Leigh VK2KRR worked Terry VK3ATS in Mildura and Garry VK5ZK in Gawler. In the evening, he worked Phil VK5AKK - S9+10 at 763 km, Bill VK5ACY - S3 at 894 km, Peter VK5ZLX - S9 at 735 km and Garry VK5ZK - S7 at 754 km.

On the morning of the 22nd, the high had moved across favouring north/south paths from Melbourne. Mark VK2EMA in Tottenham worked Ron VK3AFW and David VK3HZ in Melbourne - a distance of 650 km - on both 2 m (S9+20) and 70 cm (S6). Signals were steady for quite a while indicating tropo rather than aircraft enhancement. Phil VK5AKK was worked by VK3HZ at S5, although enhancement to the west had dropped right off. Unfortunately, Phil had been getting strong signals from the Melbourne area beacons and calling for most of the morning, without any takers. That evening, Peter VK5ZLX was S9+ in Melbourne. Norm VK2XCI was also worked at S3. Leigh VK2KRR worked Colin VK5DK in Mt Gambier (630 km) with signals up to S9+10 dB.

## ACA changes

By now you should all have received a letter from the ACA regarding the outcomes of the review of amateur service regulation. There are a significant number of changes that will affect us all, but much has already been said about that. But what changes are important to the VHF/UHF weak signal operator?

The most significant change is that all classes of licence will be given access to all of the 2 m and 70 cm bands. The

Standard licence class (formerly Novice) will also be able to use the 6 m, 23 cm, 13 cm and 6 cm bands. (In what appears to be an anomaly, Foundation licensees will be able to use all "Voice" modes - including SSB - but Standard will be limited to the current Novice modes - not including SSB.) Thus we should look forward to an increased number of active stations on the low ends of those bands.

The ACA did back away from proposals to allow us parity with our US brethren regarding maximum power limits, arguing that EMR problems were highly likely in the urban environment. However, for the Advanced licence class, they are proposing a maximum power of 400 W PEP for ALL modes, not just SSB. That means 400 W RMS for modes like CW, FM and WSJT.

## Beacons

Paul VK2YVG in Broken Hill reports that new beacons have been installed on Mt Darling, about 20 km east of Broken Hill in far western NSW. They are on 52.525, 144.525 and 432.525 MHz. The beacons are on a time cycle, running through all 3 bands in about 50 seconds. Each beacon is active for about 14 seconds

and transmits in CW "VK2RBH Broken Hill". On 2 m & 70 cm the beacons run 10 watts to a pair of crossed folded dipoles. There is a catch though. Only the 2 m beacon is running at the moment. The 70 cm beacon is suffering from RF feedback, but should be fixed soon. The 6 m beacon has been held up waiting for

the licence to be issued. The 2 m beacon is getting out quite well and has been heard several times in Melbourne.

The VK3RGL 70 cm beacon's frequency has been reset and now appears to have stabilised somewhat. It is now approximately 30 Hz lower than its assigned frequency of 432.530 MHz.

# GippsTech 2004

The annual Gippstech conference has just concluded. The 70 people who attended once again experienced an event that should not be missed by anyone interested in weak-signal operating. There were 15 excellent presentations given by 11 amateurs on a wide variety

of topics, some of them practical, some theoretical, some historic and many of them intended simply to stimulate the thought processes. I'll bet there are many attendees now back in their workshops hatching new project plans (I know I am). Thanks to Peter VK3KAI and his

many tireless helpers for making the event again a huge success.

The date has already been set for the next conference – July 9th and 10th 2005 – so put that in your diary now.

Please send any Weak Signal reports to David VK3HZ at [vk3hz@wia.org.au](mailto:vk3hz@wia.org.au).

## Digital modes

Rex Moncur - VK7MO

The new version of WSJT (v 4.7.0), which includes Spectran, is a winner for small station EME as one can detect stations on Spectran that are well below the level that can be decoded, and wait for them to come out of the noise (set Spectran to 1.3 or even 0.67 Hz bandwidth). While contacts might take an hour or more, it is amazing to see the occasional peaks in signal give a perfect decode in the average. Possibly the prime advantage of Spectran is psychological, in that if you can see a signal you are more inclined to wait around for it to peak sufficiently to decode. The technical advantage is that once you see a signal you can narrow the tolerance to 25 or even 10 Hz and avoid birdies and stronger noise peaks on adjacent frequencies. The use of Spectran makes it practical for single yagi stations to work other small or medium stations and greatly increases the numbers of possible contacts. To work the smaller stations it is best to use JT65A and this in turn requires very good stability at both ends (better than 2 Hz over a minute). JT65A is 1 dB better than JT65B and while 1 dB does not sound much it is equivalent to reducing

the time to make a contact from say three hours to two. For those with limited patience this can be the difference between making a contact or not. Before trying JT65A, do some test transmissions with single tone R27 on FSK441A set to 60 second TX period with a local station who has good stability and can watch for you on Spectran in a bandwidth of around 0.2 Hz.

It is good to see the ACA will allow the Digital modes the same power limit as SSB (400 watts PEP), subject to EMR assessment.

Garry VK5ZK and Leigh VK2KRR have regularly been working 754 km on JT44 using less than 10 watts and single yagis. Gavin VK3HY was excited to get perfect copy from a Czech station on EME using JT65. Rod VK2TWR has sorted out his computer and is working into Hobart on JT44. Cec VK6AO is going to the North of the state and will run some meteor scatter tests with Don VK6HK.

Something not mentioned in last month's report is that VK2KRR was able to copy VK7MO/6 on a 1731 km direct tropo path while Rex was on his DXpedition from Eucla in May. Rex's

144 MHz FSK441 signal was weak but audible at times.

During the morning FSK441 session on June 19th, a huge "burn" from a large meteor was experienced by most of the stations involved - VK1CJ, VK2AWD, VK2EAH, VK2FZ, VK2XCI, VK3AXH, VK3HY and VK7MO.

The burn was at least one minute and 3 seconds long. It is by far the longest burn we have had during our normal meteor activity sessions in around 3 years of running tests, although there were many similar long burns during the Leonid peak a few years ago that produced great SSB contacts.

The fact that the signals were seen by Waldis VK1CJ in Canberra and also by Gavin VK3HY in Melbourne suggests it was somewhere between these two locations. Gavin received Norm VK2XCI first and then Adrian VK2FZ second suggesting that the meteor was going from west to east. Therefore, a large, hot rock might have hit the ground in Eastern Victoria somewhere, up to the Snowy Mountains.

## 2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

Out of one DX season and into another, the 2003 / 2004 season was filled with excitement.

I'd like to announce two end-of-season awards for Outstanding Achievement in FM DX for 03 / 04. I feel that the two stations that stand out as making some amazing contacts and made for some great reading to this column during the past season were - Brian VK5UBC from Gawler, and Dion VK7YBI from Burnie.

Brian and Dion made some jaw dropping FM DX contacts during the

year. Here is a quick look back at a few of these beauties.

Dion made a number of contacts into the Adelaide area from his home QTH near Burnie in Tasmania. These included a 913 km trip to the Murray Bridge repeater on 146.875, a 925 km trip to the Crafers repeater 147.800 and also a 947 km trip to the Barossa Valley repeater on 146.825. Dion also worked simplex on 2 m with Shane VK5NRV in Woodside at 921 km. Many people mentioned the rarity of hearing VK7s into Adelaide. Dion has his sights set

on cracking the 1000 km mark so watch this space.

Over the period of only a single season, one quick look at the ANVDC FM DX Records list tells you that Brian VK5UBC holds 7 of the 8 records for VK5 on 2 m; five of these are near or in excess of 2000 km! Brian's top two simplex contacts were - 1900 km from his home QTH at Gawler to VK6DM in Albany, and 1044 km from a portable location at Corny Point to VK7LCW in Penguin, Tasmania. Brian's top two repeater distances were to sites in Western

**Australia** – 2102 km from Gawler to VK6RMW at Mt William and 2062 km to Mt Saddleback VK6RMS.

Thanks also go to everyone who made an effort in the search for 2 & 70 FM DX during the past season. It's been fascinating. Let's see now what the new season has in store for us. I'm sure it will be even better.

On to current activity reports. June was quite good in the south east providing a good end to the season. Conditions from VK4 remained poor.

On the 5th of June in the SE conditions came up in the evening after around 6.30 pm. From here the path was initially to Mount Gambier, which faded and then some good signals were noted from the Adelaide and Port Augusta directions. The Port Augusta repeater was up to S9 at 913 km. Conditions into Adelaide were rather poor.

Around 9.10 pm the VK5RMN Port Pirie repeater came in and I had a few good overs with Arnie VK5NEX and Daryl VK5HBK both in Whyalla, also Jim VK5AJW called in from Cowell, their locations are on the west side of the Spencer Gulf, and the Port Pirie repeater is 867 km from here.

The big one for the month ran from the morning of the 21st to the afternoon of the 23rd of June. A lovely big high-pressure cell loomed on the weather maps and was drifting east. From about 4.30 am on the Monday signals began coming in. I was initially woken by the Adelaide beacon on 144.450 and then checked the Adelaide repeaters and found Murray Bridge, Crafters, Lobethal and Berossa Valley. The Mildura repeater was also present and Terry VK3ATS was worked on 146.500 at 466 km. Bill VK3LY in Nullarbor was able to work to the Crafters repeater VK5RAD.

That evening things were looking good. At 7 pm the Adelaide beacon was S7 and a number of Adelaide repeaters were coming in OK. Also present was the Central North repeater, Port Pirie and Port Augusta.

I noted some slight enhancement to

the north, and at about 8 pm a very noisy signal was heard opening the Canberra 146.950 repeater. This lasted around 2 overs of a one sided QSO and I am quite sure I heard the station sign as a VK4. There is a repeater at Glen Innes, far NE NSW on the same frequency as Canberra. So if there was a VK4 station somewhere in QLD beaming south into the Glen Innes repeater around 8 pm on Monday the 21st of June, you may not know it but you were also getting to Canberra.

Helping confirm the possibility of this VK4 to VK1 path was Alan VK2KAW in Wagga who was able to work David VK2AYO in Dubbo via the Coonabarabran VK2RCC repeater at a similar time. This is a good 480 km trip for Alan and an interesting path.

A little later, on the Canberra repeater, around 10.30 pm while speaking with Steve VK2SZ about the VK4 station, we had a couple of interesting stations call in. Initially Noel VK3ANW at Kyabram was able to call in and say g'day. This is around 345 km for Noel over the mountains. After this a noisier

small signals from some parts of VK2.

Colin VK3LO and Laurie VK3AW were worked here on 146.500 via aircraft enhanced tropo. Good signals were also showing from the Melbourne repeaters, extending even to the 70 cm band, where some pretty awesome signals were noted, especially from Mt Macedon 439.275 up to S9+40 and the Grampians 438.675 up to S9+50dB at 471 km.

At around 9 pm conditions took an interesting twist and let the Broken Hill repeater through. The Broken Hill repeater on 147.000 peaked at a fantastic S9+10 dB signal at 638 km and held in there for about an hour. I had a good chat with Paul VK2YVG and Steve VK2SRN, both in Broken Hill. Was also able to contact Steve on simplex up to 5/5 signal, which was nice to see.

Good to hear of Greg VK3MTV lurking about the bands from Mildura. On the same night, Greg was able to get into the Canberra repeater and to the Wagga repeater, as well as a few from VK5.

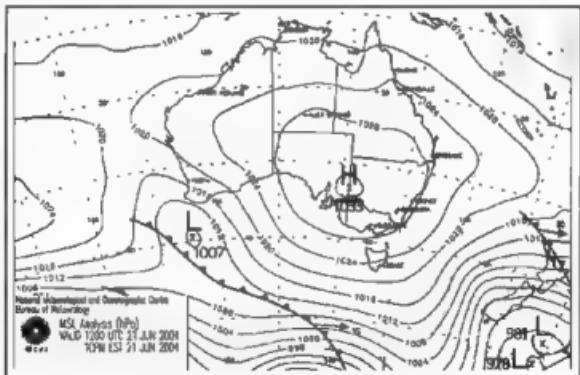
In the morning on the Wednesday there were good signals into VK3 including Mildura, but all VK5 signals were totally gone. Signals were still good even on 70 cm, and Mt Macedon 2 m was running at 60dB+. The rarely present Warrnambool repeater was up to S9 at 512 km and even Broken Hill was still available but weak.

Terry VK3ATS was doing well from Mildura this morning and was also able to get to Broken Hill, we gave simplex a try and Terry was S9+40 here. Terry could also access the Wagga repeater and

Canberra, but Terry did comment that he was not hearing anything down Melbourne way, which was interesting to note.

That afternoon, everything was gone and conditions were back to their usual quiet state.

That's about it for this month. Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at [v2krr@telstra.com](mailto:v2krr@telstra.com).



# In Charlie's Way

A short story about a ham, his mates and the CW receiving exam.

## Part 4 - 'Charlie's quality'

**C**OLIN'S RADIO ROOM looked like a bomb had hit. He tried cleaning it up a few times but it always managed to get disorganised again. Life's too short, he figured so he rarely tidied it up. Every now and then he would give the room a quick clean up just to make it look okay. His former girlfriend, Susie had refused point blank to enter the room — the mess was just too much for her to cope with — and that was after a tidy up!!

Charlie walked into the room and thought to himself that he often stirred Colin about the mess but thought it would be best not to comment this morning. Colin leaned over his desk and switched on the '520s and pointed to the pad and pen lying nearby.

'OK' said Colin authoritatively 'it's time for the exam to begin'.

Charlie went as white as a ghost. Colin could tell that Charlie was nervous in this simulated exam situation.

'Just relax' Colin said soothingly. 'It's not something to be frightened of.'

Charlie clearly wasn't convinced and said 'If I could get these butterflies out of my stomach I could start a farm!'

The computer chirped into operation and the monitor made a brief swooshing sound before a picture slowly formed on the screen. The picture on the monitor flashed as various start-up stages were passed. Eventually the Morse-sending program was activated and some pleasant sounding Morse emanated from the radio speaker.

'See, it's not so bad' said Colin pointing to the speaker and smiling. 'It's okay here but it's not so good in the exam room' wailed Charlie painfully. Charlie and Colin eventually got down to some Morse practice. Colin would type in some text and then press a button and the machine would generate it. Colin would copy it down. He mostly got them right.

Colin said with a cheeky grin, 'Do you wanna cup of tea?' Charlie nodded, and before he could speak Colin said, 'We'll copy this lot down and then we'll have a

cuppa okay'. Charlie nodded again.

Colin waited till Charlie had his pen poised and then asked 'okay?'. Again Charlie nodded. Colin started to type — it looked and sounded as though he was typing, anyway. He pressed a button on the keyboard and Morse was produced again. Charlie started to write the Morse down. While Charlie copied the Morse, Colin read an article from an old electronics magazine. The magazine article was titled 'The Origins of Morse'

A few minutes passed and Charlie shuffled in his chair uncomfortably. A minute later he groaned — this was the longest exam-style copying he'd done in a while. About thirty seconds later the Morse ended with a welcome and pleasant sounding 'AR'.

'What the hell was that?' asked Charlie, angry, but more relieved than anything. Colin avoided answering the question. He read out the text that had been sent and asked Charlie how he went. 'Well bloody hell, I only got three ... no four wrong, but that's all'.

The grin returned to Colin's face. He explained to Charlie that the text he'd just copied was sent at twelve words-per-minute and lasted just over seven minutes.

'You just passed your first exam' said Colin happily and then corrected himself by adding '...well a simulated exam'. Charlie started to say something, maybe to downplay what he had just achieved, but Colin wanted him to know that he was doing well and to encourage him at the same time.

'That text was longer than you'll get in the exam, and also faster. You did very well'.

'I suppose I didn't make many errors' Charlie said somewhat positively and then continued by saying 'I'm going to pass this damn exam'.

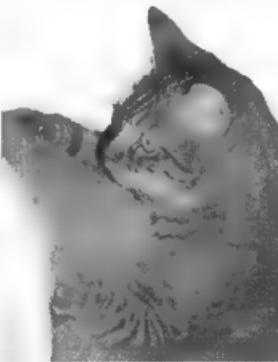
'Yes you will. Keep practising for about twenty minutes a day with text sent faster and longer than the exam and you won't have any problems'.

Tiger the cat walked into the room, first rubbing against Charlie's leg and then against Colin's.

Charlie leaned forward and put his hand down, and when Tiger came to him he rubbed the back of his neck. Charlie looked up at Colin and said 'Thanks mate'.

There was not much more to be said but Colin smiled and said confidently 'You'll do it'.

**to be continued**



**International YL Meet**  
**October 8 to 11, 2004**  
**in Seoul**  
**YLs, start planning your trip now**

**Adelaide-Amman****292****Brisbane-Auckland****123****August 2004**

T index 37

First F 0-5

Short

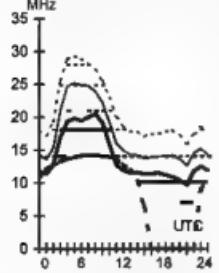
13022 km

First F 7-9 IED

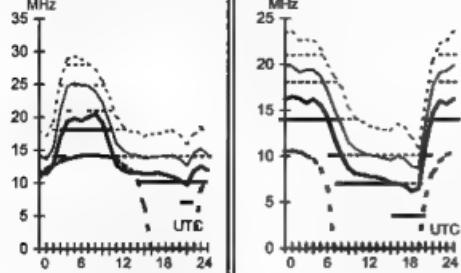
Short

2291 km

MHz



MHz

**Legend**

UD

E-MUF

DWF

F-MUF

ALE

&gt;10%

&gt;50%

&gt;80%

UTC

Time Scale

**HF Predictions**

by Evan Jarman VK3ANI

34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when useable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

**Adelaide-Invercargill****126****Brisbane-Dakar****217****Canberra-Lima****239****Darwin-London**

First F 0-5 IED

Short

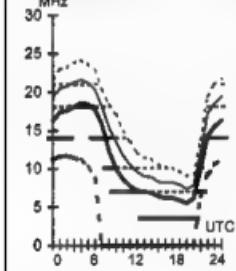
2796 km

First F 0-5

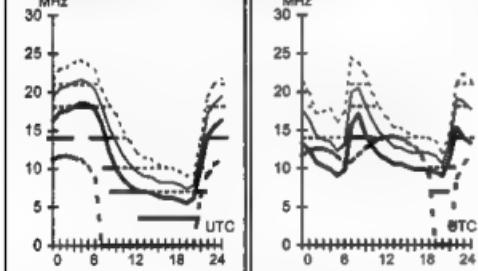
Short

15279 km

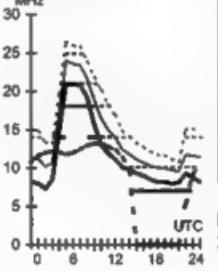
MHz



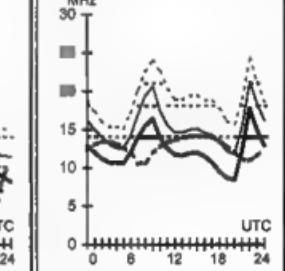
MHz



MHz



MHz

**Adelaide-New York****67****Brisbane-Honolulu****49****Canberra-Moscow****317****Darwin-London**

First F 0-5

Short

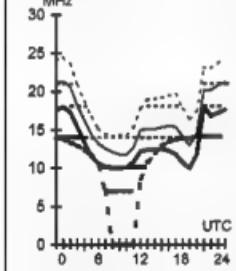
17092 km

Second 3F5-9 JED

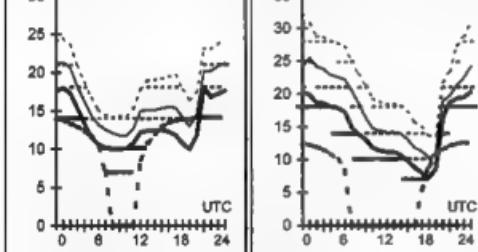
Short

7569 km

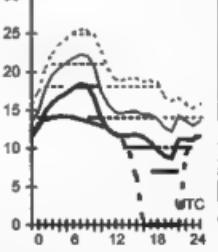
MHz



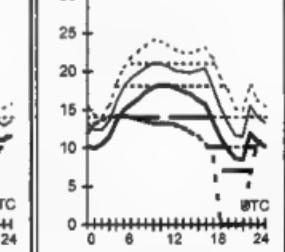
MHz



MHz



MHz

**Adelaide-Rome****296****Brisbane-Singapore****293****Canberra-Tokyo****362****Darwin-Pratoria**

First F 0-5

Short

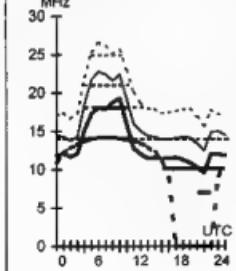
15337 km

Second 3F8-12 3E0

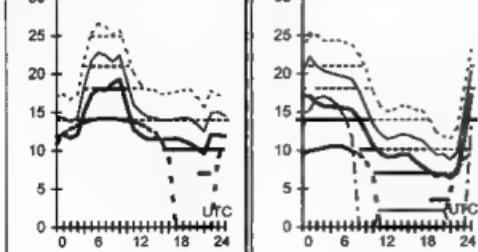
Short

6146 km

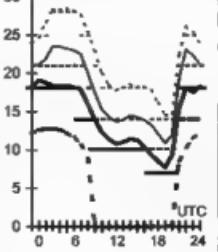
MHz



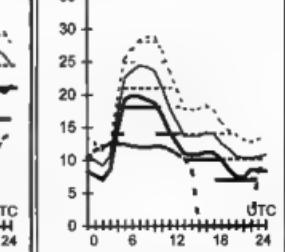
MHz

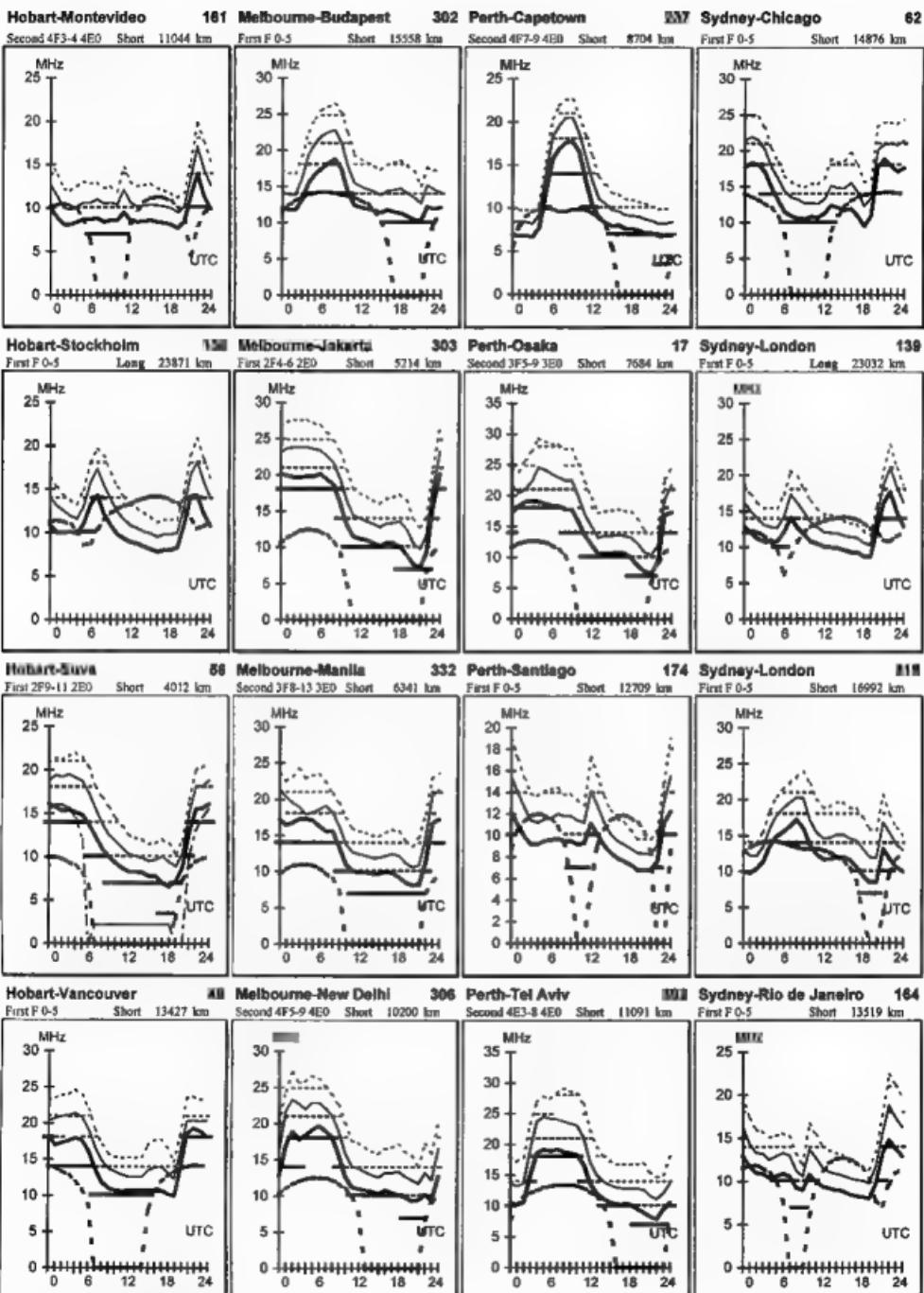


MHz



MHz





# Hamads classifieds

# FREE

## FOR SALE NSW

- Wilson System SY-1 4 element beam \$350, Prop Pitch Motor \$250, DX-2 amplifier with QSK \$3000. Tom VK2OE@arrl.net or 2/25 Andrew St Inverell NSW 2380 or Phone 0413 796 851 8-9 PM
- 16x2 backlit LCD displays AC-182D-YJLY57H. These have the industry standard interface. For more information, data sheet and constructional articles see <http://vk2bk.com> Asking \$9.80 + \$3.20 post. Email markweb@bigpond.com or VK2BAK QTHR, Phone 02 4997 3173

## WANTED NSW

- Circuit and handbook THP HL-166V 6 metre power amp. Will pay costs. Ted VK2ARA QTHR Phone 02 4272 9521

- Copy of owner's manual Yaesu FT-757 GX II. VK2AEW John Robinson QTHR, Phone 02 4344 7191.

- Copy of book, "Radiotron Designer's Handbook", compiled by Langford-Smith, published 1950's by Amalgamated Wireless Valve Company. Price and condition of book please to John, VK2SIG, QTHR; or vk2sig@macbenn.id.au

- FDK multi 750 2 metre rig for parts only Need not be working. Phone 02 4287 8406 mickh1@swiftdsl.com.au Mick VK2BZE

## FOR SALE VIC

- Ameritron AL-811 linear amplifier 10-160m, as new \$575. Bob VK3PT QTHR, Phone 03 5439 8314.

## About hamads....

- Hamads may be submitted by email or on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully and clearly, use upper AND lower case.
- Separate forms for For Sale and Wanted items. Please include name, address STD telephone number and WIA membership number if you do not use the flysheet.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
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- QTHR means the address is correct in the current WIA Call Book.
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- Boat Anchors, FT-101s. Two FT-101s, both need a fix. One needs a second mixer box rebuild, all parts intact, the other has lost low level carrier. Incl. FV-101 Ext. VFO, condition good. Two for the price of one say \$200. Kenwood TS-520S serviceable, no DC leads, spare finals, \$250. Test Gear: Two Heathkit 30 MHz valve Sig Gens plus Heathkit VTVM, all goers, with 110 V Jaycar auto xformer. Palec ET3 Valve Tester \$250 the lot. All at the gate in Sale or meet Morwell. VK3VI, Max gooloo@netspace.net.au, Phone 03 5144 2587

## WANTED VIC

- CW filter YG-455C-1 or YK-455C-1 for Kenwood TS-140S or TS-680S. Peter VK3DU QTHR, Phone 03 9379 3626.
- WWII Reception Set No 4, No 19 set complete or power supply, cables, junction boxes, any WWII radios 101, 221, 122, 38, no 11 or any associated parts. Instruction books for these or any sets. An ARN-6 radio compass for Vampire Jet being restored at Moorabbin air museum. Phone 03 9799 9580 or email emachem@techinfo.com.au. Roger VK3HRS.
- Retired pensioner in his 70s would like to obtain some amateur radio gear to start a basic HF CW station on a pensioner budget. Roy, VK3BAM, QTHR, Phone 03 5263 2032.

## WANTED QLD

- Wanted for Townsville RAAF museum. Collins 427D psu for 618F VHF receiver, top cover for AWA C6770 RX, psu and speaker units for AR7, R115, T1154. Other donations welcome. Wayne VK4WDM, phone 07 4788 8781, melrose@optusnet.com.au.

## WANTED TAS

- KVG 9 MHz xtal filters XF-5A and/or XF-9B or any 9.0 MHz filters with an approx. 2.4 kHz BW. Email Trevor VK7TB cabriggs@optusnet.com, or Phone 03 6398 2118.

## MISCELLANEOUS

- The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially early DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel (03) 9728 5350

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Regards Rob Long VK2XZ  
rob\_vk2xz@hotmail.com

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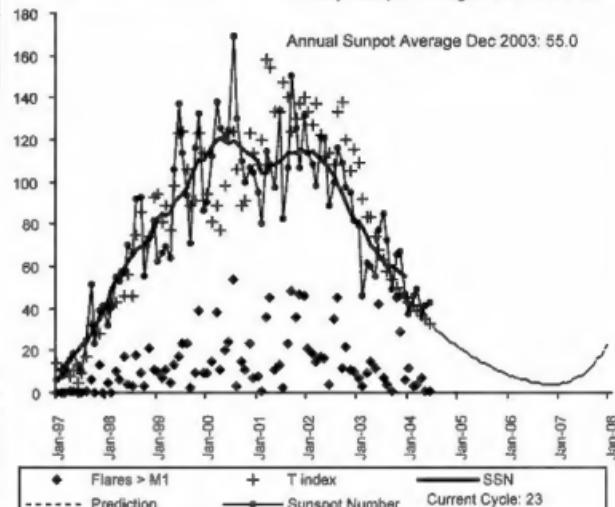
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## Sunspot Numbers

Monthly Sunspot Average June 2004: 43.2



Drawn from monthly data provided by the Ionospheric Prediction Service

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10/229 Balclava Road, Caulfield North VIC 3161, Australia	Phone 03 9528 5962, Fax 03 9523 8191, 10am to 4pm daily, nationaloffice@wia.org, <a href="http://www.wia.org">www.wia.org</a>	Subject to change see <a href="http://www.wia.org">www.wia.org</a> , follow national news prompts. Contact <a href="mailto:nationalnews@wia.org.au">nationalnews@wia.org.au</a> , VK1WIA to National repeaters, HF VK1WIA 7.128 MHz, Sundays at 11.00 am
Advisory Committees	Contact	News Bulletin Schedule
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<b>VK5 South Australia and Northern Territory</b>	Phone 08 8294 2992	VK1WIA via major VHF/UHF rptrs Sunday 9am 145.000, 147.000 HF bands as shown on the web Darwin 146.900 and HF
<b>VK5NB Jim McLachlan VK5APR Peter Reichelt VK5ATQ Trevor Quick</b>	<a href="mailto:jimac@picknowl.com.au">jimac@picknowl.com.au</a> <a href="mailto:peter.reichelt@bigpond.com">peter.reichelt@bigpond.com</a> <a href="mailto:vk5atq@chariot.net.au">vk5atq@chariot.net.au</a>	
<b>VK6 Western Australia</b>  VK6NE Neil Penfold VK6XV Roy Watkins VK6KZ Wally Howse	Phone 08 9351 8873 <a href="mailto:vk6ne@upnaway.com">vk6ne@upnaway.com</a> <a href="mailto:vk6xv@bigpond.net.au">vk6xv@bigpond.net.au</a> <a href="mailto:vk6kz@bigpond.com">vk6kz@bigpond.com</a>	VK1WIA Sunday 9.0am via WIA network
<b>VK7 Tasmania</b>  VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	Phone 03 6234 3553 <a href="mailto:phil.corby@tassie.net.au">phil.corby@tassie.net.au</a> <a href="mailto:vk7dg@wia.org.au">vk7dg@wia.org.au</a> <a href="mailto:regemm@ozemail.com.au">regemm@ozemail.com.au</a>	VK1WIA via Tony, VK7AX 8.55am

## Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site [www.wia.org.au](http://www.wia.org.au) or the national office address above.

# PNG amateurs remember ~ at the Kokoda gateway



Amateurs in Papua-New Guinea have long wanted a station for the RD Contest that offered a closer link to the past history that makes Remembrance Day important.

It has been the aim of Rick P29KFS to establish and operate a field station from either the start of the Kokoda Trail or the Bomana War Cemetery.

This has not been a simple task but at last, with the help of some amateurs new to PNG AR, sufficient interest was generated and equipment put together to make it all happen on at least one day of the 2003 weekend.



P29NW Gary, P29GQ David, P29ZTC Terry, P29VVB Vladimir

*"I recall walking up the Golden Staircase on a hike from Port Moresby, remembering that then it was actually a river of mud two feet deep and that men were carrying 70 pound packs loaded with ammo and rations one way and their wounded mates back the other way"*



A real field station out in the bush was hoped for, but security problems, work commitments and the number of people available to operate the station were all against such a station being created.

In late 2002 it started to look as though the station could be established.

In 2003 a small group was formed to push for the collection of equipment, building of aerials and scheduling of operators.



P29ZTC Terry



P29VVB Vladimir

see page 28 for full story

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## IC-718 A compact HF all band transceiver.

- A superior performer with simple, straightforward operation with keypad • Optional AF DSP capabilities, including noise reduction & auto notch function • It's versatile, compact & loaded with features • Morse Free Package.



## IC-706MKIIIG HF • VHF UHF

The amazing evolution of the legendary 706.

- Now includes 70cm @ 20W and 50W on 2m
- Standard feature DSP • Built in tone encoder & decoder
- Tone scan • Mosfet PA • You get base station performance and features in a mobile rig sized package • Morse Free Package.



**NO FILTERS REQUIRED**

## IC-7400

- Sharp & soft IF filter shape • 100W HF /6m /2m • Digital twin PBT
- DSP • SSB / CW synchronous tuning • Built in antenna tuner
- RTTY demod / decoder • Digital RF speech processor
- Microphone equaliser • Morse Free Package

**ICOM**  
2 YR WARRANTY

find your nearest ICOM dealer at  
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